

The Mining Journal

RAILWAY AND COMMERCIAL GAZETTE

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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LONDON, SATURDAY, SEPTEMBER 15 1877.

[WITH SUPPLEMENT. PRICE PER ANNUM, BY POST, £1 4s.]

MR. JAMES H. CROFTS, STOCK AND SHARE BROKER,
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Business in all the principal COTTON SPINNING Shares.

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MINES INSPECTED.

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20 London, 3s. 3d.	20 Lanes Chemical, 27½.	25 St. Harmon, 22½.
20 London, 3s. 3d.	20 Leadhill, 25½.	25 Tankerville, 24½.
20 London, 3s. 3d.	25 Llanrwst, 22½.	50 Van Consois, 10s. 6d.
20 London, 3s. 3d.	25 Marke Valley, 17s. 6d.	40 W. Tankerville, 17s. 6d.
20 London, 3s. 3d.	25 New Quebrada, 23.	20 W. Wye Valley, 21.
20 London, 3s. 3d.	25 North Laxey, 15s.	10 West Chiverton, 21.
20 London, 3s. 3d.	25 Pateley Bridge, 22½.	15 Wheat Newton, 15.
20 London, 3s. 3d.	20 Penryn, 4s.	100 York Peninsula, 5s.
20 London, 3s. 3d.	100 Parys Mount, 5s. 3d.	
20 London, 3s. 3d.	50 Port Phillip, 10s.	

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FORWARD BONDS—ARGENTINE—EGYPTIAN—RUSSIAN, TURKISH, SPANISH, PERU.

RAILWAYS—HOME AND FOREIGN.

SPECIAL BUSINESS in the above, and Fortnightly Accounts opened on receipt of the usual cover.

THE WAR.—The latest Telegrams from the SEAT OF WAR are received throughout the day, and also the course of the Markets from EVERY CONTINENTAL MARKET.

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Name of Mill.	Last four dividends, per cent.	Closing quotations, Sept. 14.	Buyers.	Sellers.
Central	20, 10, 10, 10	10	2	2
Greenwood	20, 10, 10, 10	10	3	3
Green Lane	20, 10, 10, 10	10	5	7
Oldham Twist	20, 10, 10, 10	10	19	20
Bayum	20, 10, 10, 10	10	1	2
Blue	20, 10, 10, 10	10	1	2
Widow	20, 10, 10, 10	10	1	2

Business—The shares of good Cotton Spinning Companies pay remunerative dividends, the mills being almost entirely conducted on the Co-operative System, under the Limited Liability Acts. With a revival in trade the present rate of dividends would be augmented.

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20 Flagstaff, 22 1/2s. 6d.	20 Port Phillip, 10s. 6d.
5 Glenroy, 20s. 6d.	15 Roman Grav., 29 1/2s.
5 Great Laxey, 22 1/2s.	20 Richmond, 24 1/2s. 3d.
30 Hultafall.	100 St. Harmon, 22 1/2s.
100 I. X. L., 6s.	15 Tankerville, 24 1/2s.
50 Javali, 3s. 3d.	40 Teocoma, 11s. 6d.
20 Kapanga, 22s. 6d.	5 Van Consois, 11s.
15 Leadhill, 25 1/2s.	25 W. Tankerville, 17s. 6d.
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EXTRACT FROM
MESSRS. PETER WATSON AND CO.'S
BRITISH AND FOREIGN MONTHLY MINING NEWS,
Stock and Share Investment Notes—Mines, Minerals, and Metal Markets
—Share List, &c. No. 789—Vol. XV. For September.

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Glenroy, 17s. 6d. Penstruthal, 6s. 3d. I. X. L., 5s. 3d.

Glyn, 11s. Rookhope, 18s. East Chance, 21s. 3d.

Holmwood, 31s. Tankerville, 24½. N. Zealand Kap., 25s.

Leadhill, 25s. 9d. Van Consois, 11s. Port Phillip, 9s. 6d.

Ladywell, 19s. West Tankerville, 19s. 6d. Richmond, 24½.

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10	Glasgow	5	11½ - 11¾
10	Hull	6	13 - 13½
10	Leeds	3½	9 - 9½
10	Sheffield	5	10 - 10½
10	Swansea	5	10 - 10½

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Established 1857.

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Argentine 2 1/2 2 3/4

Assheton 1/4 1/4

Bodidris 1 1 1/4

Carn Brea 20 22

Chontales 1/4 3/4

Derwent 1 1/2 2

Devon Great Consols 2 1/2 3 1/4

Dolcoath 22 24

Don Pedro 9s. 11s.

Eberhardt 5 1/2 5 3/4

East Caradon 5s. 7s. 6d.

East Van 4 4 1/2

Exchequer Gold 4s. 6d. 5s. 6d.

Flagstaff 2 1/2 2 3/4

Glenroy 17s. 6d. 20s.

Glyn 11s. 6d. 12s. 6d.

Gorseid & Merilyn 5 1/2 6

Great Laxey 20 1/2 21

Javali 6s. 8s.

Last Chance 7s. 1

Ladywell 17s. 6d. 20s.

Llanrwst 2 2 1/2

Leadhill 8 1/2 9 1/2

Marke Valley 7s. 1

Miners 216 218

North Laxey 14s. 15s.

New Quebrada 2 1/2 2 3/4

New Zealand Kapanga 1 1 1/4

Parys Mountain 4s. 5s.

Pateley Bridge 2 2 1/4

Richmond 4 1/2 4 3/4

Roman Gravel 9 1/2 9 3/4

Rookhope 17s. 19s.

San Pedro 1 1/2 1 3/4

South Condurrow 7 1/2 7 3/4

Tankerville 6 1/2 7

Tinoroff 10 11

Van 30 32

Van Consols 7s. 6d. 12s. 6d.

West Chiverton 10 12

West Craven Moor 1 1/2 1 3/4

West Godolphin 1 1/2 2

Lectures on Practical Mining in Germany.

CLAUSTHAL MINING SCHOOL NOTES—No. XLII.*

BY J. CLARK JEFFERSON, A.R.S.M., WH. SC.,
Certificated Mining Engineer.

(Formerly Student at the Royal Bergakademie, Clausthal).
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SECTION III.

BLASTING MATERIALS.

NITROGLYCERINE COMPOUNDS.—One of the most useful discoveries in blasting materials, and which when the great dangers that have hitherto attended its use have been obviated may become more generally used is that which was made about 25 years ago by M. Sombrero, in the laboratory of Pelouze, at Paris—the preparation of nitroglycerine. Its great explosive power was from the first well known, but its preparation was attended with such great danger, and seemed to promise but little prospect of a useful technical application, as it could not be brought to explosion by direct ignition, as ordinary gunpowder, and it was left for Alfred Nobel, head of the firm of Nobel and Co., at Hamburg, to introduce it to the engineering world, and to commence its manufacture on the large scale. To him is due the honour of obviating and diminishing its dangers by transport, storage, and use, which were only learnt by time and experience, and although it cannot be said that he has succeeded in overcoming all these dangers in its use as nitroglycerine, still he has, in the form of dynamite, produced a blasting material which in certain mining and engineering operations is vastly more efficient than gunpowder, and which in these cases it has entirely superseded.

In its liquid form as blasting oil nitroglycerine is now but seldom used. In Belgium, Sweden, Austria, and this country its use is forbidden. The great liability to explode by carriage, in the handling of barrels or flasks in which it has been kept by the least concussion, the danger on its solidification, which takes place at 4° centigrade, the spontaneous decomposition during storage, which renders it liable to spontaneous explosion, the injurious effects it exerts on the human system by mere touch or contact, which can very easily occur during its use underground, the danger from the misuse of vessels in which it has been kept, and the great care required in using it, and other influences have proved its unsuitability for ordinary blasting purposes, and led to its abandonment; but not less to endeavours on the part of its introducer, Alfred Nobel, to remove these dangers, and who has succeeded in providing in the form of dynamite a powder which possesses almost equal effect as nitroglycerine, but without its dangers.

Glycerine itself is a colourless thick syrupy liquid, with a very sweet taste, and is soluble in water and alcohol. Its specific gravity is 1.28. It is obtained from most vegetable fats and oils. Ordinary beef suet is a glycerine in which the hydrogen has been replaced by stearic acid. One of the methods of obtaining glycerine is to decompose a fat into glycerine and stearic acid by means of high pressure steam. Glycerine is formed also in small quantities during the fermentation of sugar; or by treating a fat with a caustic alkali, which decomposes the fat, forming soap, and liberating the glycerine. When glycerine is treated with dilute nitric acid it is oxidized, forming glyceric acid. When, however, the nitric acid is in a concentrated form nitroglycerine is formed as a clear, colourless, and odourless oily fluid.

Nitroglycerine is insoluble in water and in alcohol; at ordinary temperatures it is but sparingly soluble; if, however, the temperature is raised to 50° centigrade it is more readily soluble. It is readily soluble in ether or methyl alcohol; it is much heavier than water, in which it sinks, and remains at the bottom of any vessel containing both; its specific gravity being 1.6. It possesses a sweetish pungent aromatic taste. When kept for some time at a sufficiently low temperature—2° cent.—it crystallises in long needles; at 4° cent. it assumes a thick stiff condition, which it retains until raised to 11° cent. According to Champion the following are the results of experiments made by himself on the behaviour of nitroglycerine at different temperatures:—At 185° cent. boiling takes place, with the disengagement of a yellow vapour; at 194° cent. slow volatilisation; at 200° cent. rapid volatilisation; at 217° to 228° cent. more or less rapid ignition; at 241° cent. feeble detonation; at 257° cent. violent detonation; at 267° cent. a somewhat weaker detonation; and at 287° cent. a still weaker detonation, accompanied with flame. According to others, however, explosion takes place even at as low a temperature as 180° cent. When spread out in a thin layer and ignited it burns but partially, and only that part to which the heat or flame is applied, the ignition throughout the mass being propagated with great difficulty. A powerful shock or blow is sufficient to cause detonation, but the decomposition extends only to that portion directly subjected to the blow.

If a drop of nitroglycerine be allowed to fall on a totally hot iron plate the drop assumes the spheroidal form and volatilises. On a glowing red hot plate direct ignition takes place, the nitroglycerine burning quietly off; if the plate is not red hot, but hot enough to cause boiling, then detonation takes place. It is prepared in the following manner:—Fuming concentrated nitric acid is mixed with double its quantity of concentrated sulphuric acid in an earthenware flask, kept cool by standing in a vessel of cold water. Glycerine, perfectly pure, is blown in from another vessel with steam, until it indicates 30° to 31° Baumé, and on completely cooling has a syrupy consistency: 3500 grammes of this mixture are then gently poured into a vessel, likewise standing in a cold water bath, and to this is gradually added, with constant stirring, 500 grammes of glycerine. During this part of the process the greatest care is requisite not to allow the temperature to rise greatly from the warming which follows, for explosion would occur at 180 centigrade. Several explosions which have occurred during its preparation must in all probability be attributed to this cause. After the mixture has been allowed to remain quiescent for about 10 minutes it is mixed with five to six times its volume of cold water, at the same time being constantly stirred, the nitrogen sinks to the bottom of the vessel, and the water is drawn off, after which it is again carefully washed with water, and the water again drawn off, when the nitroglycerine is ready for packing in flasks to be sent off for use.

The great danger in the preparation has led to various modifications as to the quantity and strength of the nitric and sulphuric acids, and in the method of using it. At the stone quarry at Hamel-Bazire, near St. L., the nitroglycerine is only prepared the day before its use. In a 5-litre flask 1 kilogramme of strong concentrated nitric acid is mixed with 2 kilogrammes of strong concentrated sulphuric acid. To this mixture 450 grammes of glycerine are added gradually (not all at once, but in a few grammes at a time), with constant stirring, a constant cooling of the flask (either by allowing it to stand in a cold water bath, or under a current of cold water). This mixing occupies from a quarter to half an hour. The fluid is then poured into a saucer of sandstone, with the addition of water to wash the nitroglycerine. The nitroglycerine then sinks to the bottom, which after pouring off of the water is filled into flasks, which remain uncorked. In this manner from 0.067 to 0.10 gallons are obtained. One man suffices to prepare 1 to 1.5 gallon daily. There are generally two persons employed in its preparation, who bring it themselves to the place of working, and charge the bore holes. For bore holes about 1 yard deep, one-fifth to one-third of a litre of glycerine is used.

In order to lessen the danger during the preparation E. Kopp, in using it at the stone quarry near Zschem, in the Vosges, instead of mixing the concentrated nitric acid directly with the concentrated sulphuric acid (by which the nitric acid fumes, which are so liable to cause an explosion of the mixture, are disengaged), leads the nitric acid gas directly after its preparation into a Woolf's flask, containing the concentrated sulphuric acid, and so prepares an almost non-fuming mixture of nitric and sulphuric acids: 2 to 4 pints of this mixture are placed in a cast-iron or steel cylinder of about 1 gallon

capacity, which is immersed to more than half its height in a wooden vessel filled with cold water. The glycerine is slowly and gradually added, with constant stirring, care being taken to keep the cylinder cool. This part of the process occupies from 7 to 8 minutes. The water is decanted, and the nitroglycerine, which has sunk to the bottom, is then poured into a glass flask, which is closed at the top by an india-rubber tube with burette pincers. After fully settling the nitroglycerine is run off into small flasks, without allowing the water also to follow, which is used again in the next preparation for washing the nitroglycerine. In this manner 4 to 6 lbs. of nitroglycerine can be prepared in the hour. It is, however, not suitable for transportation, and so must only be prepared on the spot, and directly before use.

In France, where dynamite first came to be used during the siege of Paris, the nitroglycerine for the manufacture of dynamite is prepared in the following manner:—The nitric and sulphuric acids are mixed in an enamelled iron saucer, which was arranged on a hemispherical shaped bowl filled with water. The vessel containing the glycerine (about 1 litre), which was provided with a glass stopcock, was placed over the enamelled saucer containing the mixed acids, and into which the glycerine was run off in a very fine stream. The temperature (to denote which an electric thermometer was used) was kept constantly below 20° centigrade. In each saucer the bulb of an air thermometer was dipped, the tube, which contained at its upper part mercury, served as an index. At one position under which, during the proper and regular course of proceeding the mercury column ought always to remain, the ends of two wires are inserted. Immediately the temperature rises above the normal condition the column of mercury touches the two wires, and closes the circuit of an electric current, which is immediately announced by the ringing of an electric bell placed in communication with the electric circuit. In order to lower the temperature the supply of glycerine is stopped, or fresh cold water is introduced into the bowl, or ice is added to the water. Care must be taken, however, not to reduce the temperature below 4° centigrade, at which point the nitroglycerine becomes stiff. Should these means not suffice, the whole contents are emptied by a mechanical arrangement into the bowl of water. In order to effect the mixing a small paddle wheel, fixed horizontally and provided with wooden paddles, is set in motion by clockwork, or by means of a small fan air is blown into the fluid, producing a rotary motion.

When nitroglycerine is impure, or when it still contains some free acid (due to imperfect washing), decomposition occurs, even in enclosed vessels, with a disengagement of gas and formation of oxalic acid. In enclosed vessels the gas generated exerts a considerable pressure on the fluid, and in this condition it requires but a slight shock or vibration to cause an explosion. In order to lessen the danger from such a cause it is advisable in the transport or storing of nitroglycerine not to leave it in such vessels as casks, sheet-iron or tin cans, so that any shock from the outside is directly transferred to the contents, which besides have the disadvantage that when the nitroglycerine is poured out a small portion still remains clinging to the sides, which by a later use of the vessel for any other purpose might give occasion (as experience has already demonstrated) to a violent and destructive explosion. On this account Nobel places the nitroglycerine in glass flasks, surrounded with willow network, so that any shock is not readily transmitted to the contents of the flask; besides this, to lessen the danger as much as possible by conveyance and storage, he mixes the nitroglycerine with rectified methyl-alcohol, by which the nitroglycerine is rendered incombustible. When the nitroglycerine is required for use the mixture is agitated with water, which takes the alcohol, allowing the nitroglycerine to sink to the bottom of the vessel, the former being decanted the nitroglycerine is obtained ready for use. By this proceeding, however, the cost is increased, and during the washing and decanting of the methyl-alcohol there is always a loss of nitroglycerine; besides this, the alcohol being very volatile, evaporates rapidly, when the mixture again becomes explosive. Also, alcohol is inflammable, and a mixture with air explosive, so that the danger in this manner may be increased. Dr. Wurtz has proposed to prepare an emulsion of nitroglycerine with a solution of a salt having the same specific gravity (such as sulphate of zinc, lime, or magnesia). When the nitroglycerine is required for use the mixture is treated with water, the nitroglycerine sinking to the bottom, and is obtained ready for use from decantation. Prof. Sully has proposed a remedy against the development of free acid, carefully to wash the nitroglycerine, and then to mix with it some substance in a powdered form, which will combine with any free acid, and at the same time exercise no chemical influence on the nitroglycerine.

ON SOME RECENT GOLD PSEUDOMORPHS.*

By T. A. READWIN, F.G.S., M.R.I.A., &c.

The four cabinet specimens of auriferous quartz forming the subject of this paper were found by me in Merionethshire. The first was found in 1868, and accounted of interest only on account of sundry specks of native electrum upon it (assaying about 80 Au. 20 Ag.). A cavity contains what appears to be a gold crystal, which when found was transparent and colourless, like the two quartz crystals accompanying it. I first noticed the change to a slight yellow colour in April, 1875. In the February following it had assumed its present brilliant colour and lustre, nearly. Since then its capacity has considerably increased, and within the last few days I have observed the beginnings of alteration in the largest of the adjacent colourless crystals. The second specimen, also found in 1868, shows an extremely interesting gold crystal, which was first noticed in February, 1876. Since that time it has become much more dense and brilliant. The third specimen, likewise found in 1868, shows (what I have elsewhere had the temerity to call) "Recent Electrum Growth," and in a cavity an interesting gold crystal pseudomorphous after quartz. The total change has taken place since February, 1876. The fourth specimen was found in 1863, and has the original rough label of that date now upon it. At that time the indexed unique projecting crystal appeared as I then hastily labelled it, as if "coloured by gold." To the unaided eye it seemed slightly opaque, but it was microscopically transparent and colourless. Before 1869 a marked change had taken place; it had become of a yellow colour, and quite opaque. In 1870 I introduced the specimen to the Geological Section at the Liverpool meeting of this Association, chiefly as a mineralogical fact of recent coloration of a quartz crystal. Seven years have since elapsed, and I believe it to be now a veritable gold crystal pseudomorphous after quartz, and deserving, therefore, of further consideration.

It is a generally received opinion that natural alteration of minerals is always "an extremely slow process," and that long, very long, periods of time must necessarily elapse before such metamorphoses can be recognised by ordinary human sense. That natural inorganic processes do go on in the production of pseudomorphs very gradually, and for the most part very slowly, seems more than probable. Generally they are unobserved in their relation to time. The present examples of pseudomorphic change, however, are placed within comparatively recent time limits, and await explanation from chemical science. In their consideration I think it is fair to assume—(1) that originally there was a kind of force of formation, which pushed the silica crystals outwards without leaving a corresponding cavity; and that afterwards another force (capillary attraction it might have been) pumped up into the crystals from the quartz matrix a fluid holding gold in solution in some state of being, as yet not generally known, if known at all. In all these examples it is plain that quartz is the altered mineral; (2) that influence of temperature (if any) must have been inappreciable; for in specimen No. 20 one of the adjacent crystals is entirely unchanged, whilst the other appears under the microscope to be exuding metallic gold (of the nature of growth), as in the case of sundry other quartz crystals, opaque or otherwise, which were found by me in the same locality.

The pseudomorphous crystals under notice are now evidently compound bodies of the nature of metallic ore; in fact, gold ore.

They appear to be alteration-pseudomorphs by the addition of a substance thought to occur less frequently than changes by loss or substitution of substance. Obviously, no analyses of the crystals, specific gravity (if any) been ascertained. It seems inappropriate to characterise the transition of one mineral into another by no means of rare occurrence in the earth's economy, and appears, therefore, an interesting question for chemists to determine. What are the conditions necessary for the production of such pseudomorphs as these?

ON SOME RECENT CHANGES OF GOLD SURFACES.

By T. A. READWIN, F.G.S., M.R.I.A., &c.

The first specimen to which I would direct attention in this paper is a piece of electrum, perhaps of Pliny, XXXIII. 23. It is a portion taken assay from a bar of gold, extracted from Merionethshire quartz in 1864, and contains about 20 per cent. of silver. At that date the surface presented the usual appearance of comparative smoothness. A few months ago I observed that a marked change had taken place at the surfaces of the nature of striation. Since May 1875, and as an object of interest I have shown it to Maskelyne, Crookes, Johnstrup, Nordenskjöld, Kjerulf, Waage, Esmark, Morris, and others. Within the last month, however, the striæ have become much more distinctly pronounced, and, therefore, I think, of greater interest.

The second specimen is pure or red gold, parted at the same time from another portion of the bulk from which 276 was taken. The change is observable in these two broken pieces. The third specimen is a portion of double-gold (electrum) extracted at the same time as the second, in 1867, and also containing about 20 per cent. of silver, with probably a trace of copper. One of the surfaces only appears to have undergone any change, and that not at all analogous to the changes on the second. The fourth specimen is pure gold parted from a portion of the same bulk as the third specimen. The change observable is an increased redness at the broken edges.

Finding that such electrum-changes frequently occur at ordinary temperatures under (what may be spoken of as) ordinary conditions; I have (wanting a better term) distinguished them as "Electrum-Growths," as examples of which I submit specimens Nos. 502 and 276, both of which were found by me at the place whence Nos. 276 and 276 came. The growths on both have attained nearly their present dimensions since in my possession, and chiefly within the two or three years. I beg, however, to direct the Section's attention to the changes which have recently taken place in the electrum specimens (the second and third), both of which were obtained from the first melting of gold that had been obtained from quartz amalgamation with quicksilver. The quartz was associated, as the above-named (if not novel to metallurgists) do not appear to have been generally observed.

TECHNICAL EDUCATION FOR MINERS.

THE ROYAL SCHOOL OF MINES.

The importance of technical education to working miners is so generally recognised that it is really surprising that so comparatively, avail themselves of the great facilities offered by the acquisition of scientific knowledge upon reasonable terms at the Royal School of Mines. It is true that the organisation of a dibranchiate cephalopod; and the definition of the hectorotylus, septostaire, and phragmocone, may only be of interest to him who boasts that his genial good humour is indicated by "peculiar curl of his nose," and are rather calculated to divert those who seek knowledge that can be turned to practical use in the mines; but it should be remembered that, although portions of this character appear in the Royal School of Mines examination papers, biology is only one of the fancy subjects taught, and need not be studied to entitle the student to the valuable distinction attaching to the Associateship of the Institution. The curriculum leading to the Associateship being designed to meet the requirements of practical miners and metallurgists is not a remarkably heavy one, yet ample for all purposes, embracing inorganic chemistry, mechanical drawing, physics, applied mechanics, and mineralogy during the first second years, whilst in the third or final year the student selects his subjects according to the particular profession to which he intends to devote himself. In the third year there are taught the mining division, mining, assaying, and geology; to the metallurgical division, metallurgy with laboratory practice; and to the geological division, natural history with laboratory practice, geology, and palaeontology.

The mode of instruction is by systematic courses of lectures, written or oral examinations, by practical teaching in the laboratory and drawing office, and also under certain conditions by excursions. The courses of instruction are distributed over three years, but those students who possess sufficient knowledge may, they think fit, pass through the whole in two years, by presenting themselves during the current year for examination in the subjects allotted to the first and second years. Those desirous of obtaining the distinction of Associate of the Royal School of Mines, have already acquired a knowledge of the subjects of the first year, may proceed at once to the courses of the third year, passing the final class examinations in those subjects before the professors of the Royal School of Mines, and paying a fee for each examination. The aggregate fees for the three years' lectures is 30*l.* in one sum on entrance, or two annual payments of 20*l.* each. And persons who have taken either a first or a second class certificate in the advanced stage in any subject in science, the examinations held by the Science and Art Department, and show that they are bona fide science teachers, may attend the lectures gratuitously, provided that they be examined in at least one subject, paying a fee for such examination of 1*l.* per course.

But the really intelligent student can materially reduce his expenses by working for exhibitions, scholarships, and prizes, of which the school offers a large number. There are nine Royal exhibitions to the Royal School of Mines, Jermyn-street, of the value of 10*l.* per annum, entitling the holders to free admission to all the lectures and the chemical and metallurgical laboratories at the Royal School of Mines, to be held from year to year for three years, the condition that the holder attends the courses regularly during those years, complies with all the rules laid down for his guidance, and passes the examinations required for the Associateship of the Institution. There are two Royal scholarships of 15*l.* each, which are given to the students who stand highest on the list of those who have passed their examinations for the first year, and a scholarship of 25*l.* to that pupil who has gained the greatest number of marks in the examinations of the first two years. The Royal scholarship will be granted to those students only who have obtained first-class places in the examinations of their year, or in the examination of at least two of the professors in the case of such students as take the first two years in one. In addition to these there are an Edward Forbes medal and a prize of books competed for annually, and to be awarded to the student who, having passed in the natural history examination, shall have obtained the highest mark in the natural history examination, and in the examination in Paleontology for the year; the De la Beche medal awarded annually to the student who, having passed highest in the first class in mining, stands high in the examinations of any one branch of science taught in the school, a bronze medal and a prize of books, established in memory of the late director, Sir Henry De la Beche; and though last, not least, the Murchison medal and prize of books, the gift of the late director, Sir Roderick Murchison, awarded annually to the student who stands highest in the geological examination.

* Being Notes on a Course of Lectures on Mining, delivered by Herr Bergstrath, Dr. von Gumbach, Director of the Royal Bergakademie, Clausthal, The Harz, North Germany.

* Written by Mr. READWIN for the recent meeting of the British Association for the Advancement of Science.

* Written by Mr. READWIN for the recent meeting of the British Association for the Advancement of Science.

In one case upon the mine was not allowed to be closed, no work stoppel, under the Spanish law, but the proceeds were divided among the claimants in such proportions as they were found entitled to. Beds of ore and deposits of gold and silver in the form of placer claims were by Spanish law registered and deeded in the same manner as veins, but the same quantity of surface ground only was allowed as in the case of veins, while under

The subject having been rendered thoroughly comprehensible by the introductory sketch, of which the above is an outline, Mr. Harris proceeds to deal with the provisions of the mining code section by section, the words of the law being first given, and then a series of judicious observations elucidatory of them, the portions referring to aliens and abstracts of title to mining claims being particularly valuable, but notice of them must be deferred until next week, when the remaining parts of the book will be further considered. Whether the reader be professional or non-professional he will certainly find plenty in Mr. Harris's work to interest and instruct him, and as the diffusion of the knowledge obtainable from it is calculated to encourage British enterprise in the United States it is to be hoped it will be widely circulated.

The second enclosed hollow (proceeding south) is that of Cachiuyayal, it commences south of the Cerro del Cobre and Cordillera de Varas. Its eastern boundary in the Andes contains the Vaquillas Mountains and the volcano of Dona Inez, from which springs the mountain chain that limits it to the south, passing the hill of Carrizalillo to that of Cachiuyayal. This second depression has its hydrographic outlet at the port of Taltal, and encloses the extensive plains of the Desert of Chile and those of Cachinal, the Profeta, and Encantada. The third hollow is of less extent, and contains only small plains, having for its limit to the north the chain that bounds Cachiuyayal on the south. It extends eastwards to the volcano of Dona Inez and Cerro del Indio-muerto. On the south it is shut in by another chain, which takes the direction of Cerro Negro, and thence on to Carrizalillo. It is composed of narrow valleys, and finds its outlet in front of the mountain of Pan de Azucar. The fourth—and last—hollow comprises the wide valley drained by the Rio Salado and its tributaries, or, rather, drainable by the Salado, should the ghost of a watercourse ever have been, or ever become, a river in reality. It is limited on the south by the high tableland of Trepanitas, which has its origin in the Cerro del Azufre on the east, and joins the Cordillera of the coast near Las Animas. It presents few or no extensive plains, but many low and narrow valleys.

What principally takes the attention on penetrating for the first time into this desert is the general nakedness and uniformity of the central region, on seeing all the plains and the hills covered with a thin stratum of sand or of small loose stones. When, however, these small stones are examined with attention we perceive that they all preserve their angular form, and that, consequently, they cannot be alluvial, as in those other countries where the sand, in rounded grains, is washed down from the hills. Moreover, large rugged rocks of fantastic shapes, constantly rising up in the distance, often remind the traveller in the desert of the ruins of ancient cities, with their steeples, towers, and pinnacles. These numerous mouldering hills and all these strange points and shapes of rock are the result of the destruction or decomposition of the plutonic rocks. Whilst the hills gradually moulder away the harder and weather-resisting parts remain, and obtrude in these rare and rugged forms, with their large points and sharp angles in such strong contrast with the generally smooth plains from which they seem to rise, and the rounded forms of the hills on which they rest. The principal cause of this destruction is due to repeated changes of temperature. The plutonic rocks, exposed during the day to the permanent action of the sun's rays through a dry atmosphere, are heated to a temperature of above 120° Fahr., and at night (unprotected by clouds) are rapidly cooled down, even in summer to 32° (Fahr.), and much lower in winter. The result of their consequent dilatations and contractions is to cause them to split in every direction, and finally to become friable and fall to pieces. Those which occupy the higher parts of a hill split in leaves, which open out like those of a book, whilst others are divided into concentric layers, and in the form of small scales fall over the sloping faces of the rocks that compose it down to the foot of the hill. Finally, in the felspathic rocks the action of the air intervenes; the felspar is converted into kaolin, and these scales are reduced to sand or powder. One only of the elements that constitute these rocks resists destruction—the silicates, in the form of quartz or chalcedony. In the amygdaloidal rocks (that always accompany the porphyries and trachytes) the numerous small particles of quartz and chalcedony that they contain remain on the ground, and this is the origin of those that are found scattered about, in quantities at times sufficient to cover extensive plains. Finally, showers of rain, as violent as they are rare in the desert, assist in spreading abroad all these loose particles that constitute the soil of the desert.

W. A. WALKER.

MINING RESULTS IN PRECIOUS METALS.—Some 20 mines of California, Arizona, Utah, but chiefly of Nevada, for the first half of the present year have yielded about \$22,000,000. Among the mines included in the number may be mentioned the Black Bear Quar Mine of California, which has produced for the same period \$110,000 and the Standard as much more, while the Grand Prize, Genes Consolidated, Hamburg and Grand Prize of Nevada, in the aggregate have produced as much as \$415,000, while a number of other mines in Arizona, Nevada, and California, have been steady monthly profitable producers of smaller amounts, swelling the production for the half-year ending June 30 of some 29 mines to the sum \$22,582,000. Of course, besides those in the same States and Territories, as also in Oregon, Idaho, Montana, and Colorado, a number of mines have been steadily yielding bullion of which no accurate statistics are available. It is to be noted in conclusion, that two

* Titles to Mines in the United States; with the Statutes and References to the Decisions of the Courts relating thereto." By W. A. HARRIS, B.A. Oxon, Barrister-at-Law, of Lincoln's Inn, and of the American Bar. London: Stevens and Sons, Bell-yard, Temple-Bar.

mines, for the period in question, have yielded \$14,780,700. Another mine the Justice, has yielded \$1,420,000; and the Northern Belle \$910,200; while the Ontario, of Utah, has turned out \$756,000.

—Mining Record (New York).

THE COAL AND IRON INDUSTRIES OF SCOTLAND.

By RICHARD MEADE, Assistant Keeper of Mining Records, Museum of Practical Geology.

The carboniferous rocks of Scotland cross the country in a direction from south-west to north-east, stretching from sea to sea—from the Firth of Clyde on the east to the Firth of Forth on the west, and occupying the great synclinal hollow or trough along the valley, and parallel to the mountain chains of the Grampians and Lammermuirs, or between the slopes of the Grampians and the north flanks of the southern uplands. This great hollow or depression is filled with a coal field nearly 100 miles in length, extending from St. Andrews, near Greenock, and about 25 miles in breadth from Dalkeith to Ayr. The area thus described is not all productive of coal; in it occur several distinct fields or basins naturally divisible into six—the coal field of the Clyde basin, the Mid-Lothian, Edinburgh, and Haddington coal fields; the Fifeshire, Clackmannan, Ayrshire, and Lismahago coal fields. The greater part of the workable coal series of the Scottish area is included in the carboniferous limestone group, for the English lower carboniferous rocks undergo a gradual physical change in their extension from south to north, or from the Midland Counties into Northumberland and South Berwickshire, and coal seams occur in and are worked in them near the base, associated with thick beds of shale, the calcareous beds having greatly diminished. Below the equivalents of our carboniferous limestone are a series of white and grey sandstones, shales, cement stones, and thin coal seams. These equal the English lower limestone shales, and are termed "calcareous sandstones," which sometimes attain a thickness of 4000 ft.

The carboniferous series of Scotland, divisible into four groups, are thus classified by Prof. Geikie, in the Third Edition of Jukes' Manual of Geology:—

	Divisions.	English equivalents.
4.—Coal measures.	Red sandstones (Hamilton), white and grey sandstones, shales, fire-clays, coal seams, and ironstone.	Middle and Lower coal measures.
3.—Millstone grit.	Moorstone rock, or Roslin sandstone and conglomerate.	Millstone grit and Yoredale series.
2.—Carboniferous limestone series.	Sandstones, sometimes coarse shales, coals, black-band, and clay-band ironstones, old shales, and fossiliferous limestone.	Carboniferous or mountain limestone.
1.—Calcareous sandstone series.	White and grey sandstone shales, cement stones, cyprid limestone and occasional coal seams.	Lower limestone shale.

The aggregate thickness of the carboniferous series of the centre of Scotland gives a section of from 8000 ft. to 9000 ft., the greater part of which is regarded as of marine origin.

CLYDE BASIN COAL FIELD.—This important coal field, the largest in Great Britain, is traversed throughout its entire length by the Clyde, and includes the greatest part of Renfrewshire, Dumbartonshire, Stirlingshire, and nearly the whole of Lanarkshire. The coal-bearing series are 4000 ft. thick, divided into upper, middle, and lower, and respectively 840 ft., 960 ft., and 2200 ft. thick, the base of the whole being the calciferous sandstone. The upper and lower series are the chief repositories of the coal seams. The upper series has ten seams of coal above 2 ft. thick, and three valuable bands of ironstone. The lower series contains three courses of ironstone and several valuable beds of coal west of Glasgow. The blackband ironstones occasionally pass into coal seams, the carbonaceous matter gradually replacing the argillaceous carbonate of iron.

MID-LOTHIAN, EDINBURGH, AND HADDINGTON COAL FIELD.—This triple coal field on the south-western side of the Firth of Forth, the waters of which separate it from the Fifeshire coal field, possesses much interest geographically and physically, and with the Fifeshire area are the most interesting of the Scotch coal fields. This triple coal field, described by Prof. Hull as a double trough, the deeper of which lies in Edinburghshire on the west, and the shallower on the east, in Haddington, has nearly 50 seams of coal of varying thickness, giving in the aggregate 122 ft. of coal. Celebrated amongst other coals here occur the 8-ft. "great seam" and the "North Greens," 1500 ft. below the "great seam," yielding the well-known Parrot coal, having a thickness of 3 ft., and greatly esteemed as a coal for the manufacture of gas. Both the above-named seams occur in the carboniferous limestone in this area, which has in section a depth of 1600 ft., and in which appear 17 workable seams of coal, the coal measures proper above, with a thickness of 1220 ft., in which are found 11 seams of coal resting on the millstone grit.

EAST LOTHIAN COAL FIELD. with an area of 30 square miles and 10 seams of coal, is composed entirely of the carboniferous limestone series, which completely encircles the coal field on the east and south-east. The coals and ironstones of this area are the equivalents of the edge coals of the Mid-Lothian area. The calciferous sandstones underlie the limestone series, rich in its fauna and flora.

FIFESHIRE COAL FIELD. remarkable for its seams of coal, so valuable for iron smelting, gas making, and steam purposes, is situated on the north side of the Firth of Forth; in it occur 29 seams of coal, with an aggregate thickness of 120 ft., some of which are of high quality, range through the measures, and enter the sea near Kirkcaldy.

CLACKMANNAN COAL FIELD.—This field stretches along the northern and eastern banks of the River Forth, which separates it from the great central coal field of the Clyde basin; in it occur ten coal seams of varying thickness, giving an aggregate section of 40 feet of coal.

AYRSHIRE COAL FIELD.—This productive area is separated from the Clyde basin by the Dunlop Hills and rocks of trap and Devonian. Much of the minerals have been destroyed through the agency of intrusive igneous masses and dykes of dolerite and basalt, which has interfered to a great extent with the prosecution of successful mining operations. About 35 ft. of coal and some measures of black-band ironstones occur in this coal field, chiefly in the lower part of the coal measures and the limestone series.

LISMAGHOG COAL BASIN. a detached area, 7½ miles from east to west and north to south, belonging to the carboniferous limestone series; it is said that three-fourths of this area is stored with coal of second-class quality, giving at Ponfrich an aggregate thickness of 53 ft., with a vertical depth of 1200 ft.

Other small coal areas occur at Canobie, in Dumfriesshire; at Campbellton, in Argyllshire; at Brora, in Sutherlandshire; and in the Isle of Skye, all of considerable importance in their respective districts. That of the Brora district appears to have been worked in the year 1593, when the first pit was opened by the then Countess of Sutherland. The coal occurring at Brora is of oolitic age, has a thickness of 3 ft., and is a valuable product in that northern district of Britain.

For many of the facts contained in the foregoing we are indebted to the writings of Prof. Edward Hull, F.R.S., and Prof. Archibald Geikie, F.R.S., of the Geological Surveys of Ireland and Scotland.

PRODUCTION OF THE COAL FIELDS OF SCOTLAND.—The pages of the Coal Commission Report contain much interesting information bearing on the early history of coal mining in Scotland, of the charters granted in successive reigns from A.D. 1189, when the earliest record appears of a grant to work coal to the Abbey of Newbattle, by Sayer de Quincy, Earl of Winchester; statistical details are, however, wanting to show the early development of the coal industries of Scotland. The earliest reliable returns available showing the number and production of the collieries of the United Kingdom commenced with the year 1854; previously, the enquiries of the Mining Record Office were confined to the produce of our tin, copper, and lead mines, but about this time the recommendations of a Commission who enquired into the working of the offices connected with the Museum of Practical Geology were carried out, and for the first time the produce of iron, coal, and other important minerals was ascertained. The writer—Mr. Robert Hunt, F.R.S.—being appointed in the previous year to aid in this work, which has since been regularly published in the "Mineral Statistics of the United Kingdom."

As previously stated, it is for the year 1854 that a careful enquiry made by Mr. Robert Williams, then H.M. Inspector of Coal

Mines in Scotland, the earliest returns of production were arrived at; that gentleman ascertained that 397 collieries were in operation, the total output of coal amounting to 7,448,000 tons. In the year 1855 there were 403 collieries, the output amounting to 7,325,000 tons, showing a falling off, when compared with the preceding year, of 123,000 tons.

The coal fields of Scotland are, for purposes of inspection, divided into an eastern and western division, the former under the inspection of Mr. Ralph Moore, and the latter under Mr. Wm. Alexander. The following are the districts under the inspection of the above-named gentlemen comprising coal areas in the shires named:—

Eastern Division.	Western Division.
Lanarkshire (East division).	Lanarkshire (West division).
Fifeshire.	Ayrshire.
Clackmannanshire.	Stirlingshire (West division).
Haddingtonshire.	Dumbartonshire.
Edinburghshire.	Renfrewshire.
Linlithgowshire.	Argyleshire.
Stirlingshire (East division).	Dumfriesshire.
Perthshire.	
Sutherlandshire.	

Following the returns regularly published in the Mineral Statistics of the United Kingdom, the annexed abstract will show the number of collieries and the output of coal in each inspection district in the years named:—

Year.	No. of collieries.	Coal—tons.	No. of collieries.	Coal—tons.
1856	199	—	208	—
1857	210	—	215	—
1858	214	—	203	—
1859	219	4,750,000	194	5,550,000
1860	228	5,150,000	199	5,750,000
1861	228	5,225,500	191	5,855,000
1862	247	5,300,000	201	5,775,000
1863	270	5,350,500	212	5,850,000
1864	274	6,250,000	223	6,150,000
1865	274	6,400,000	223	6,250,000
1866	283	6,350,000	213	6,275,000
1867	263	7,897,368	213	6,228,575
1868	230	8,486,084	203	6,233,875
1869	211	7,879,500	201	6,537,550
1870	207	8,595,238	204	6,339,315
1871	216	8,583,926	204	6,543,365
1872	252	9,046,814	201	6,336,795
1873	260	10,142,039	239	6,715,733
1874	320	10,182,326	234	6,606,335
1875	334	11,419,419	232	7,177,888
1876	367	11,667,648	313	6,997,964

It was not till the year 1859 that the production of each district was separately distinguished; in the three previous years the output of the collieries of Scotland amounted in the year 1856 to 7,500,000 tons, in the year 1857 to 8,211,473 tons, and in the year 1858 to 8,926,249 tons. From an examination of the above returns since the year 1859, a period of 15 years, it appears that the great increase has taken place in the collieries of the Eastern division amounting to upwards of 100 per cent., the increase in production of the collieries in the Western division of Scotland during the same period not exceeding 20 per cent. Summarising the foregoing returns, the total produce of the coal mines of Scotland will be found in the annexed statement, and side by side the total produce of the collieries of the United Kingdom in each of the same years for comparison:—

Year.	Scotland.	United Kingdom.
1856	7,500,000	66,645,500
1857	8,211,473	65,008,649
1858	10,900,000	84,042,908
1859	11,076,000	81,838,338
1860	12,400,000	92,787,873
1861	12,625,000	101,630,544
1862	14,709,950	103,141,157
1863	14,934,553	110,431,192
1864	15,438,291	117,352,028
1865	15,583,609	123,497,316
1866	16,577,772	127,016,747
1867	16,788,681	125,067,918
1868	18,597,507	131,867,105
1869	18,665,612	133,344,766

The reports of the Inspectors of Mines for the year 1876 show that the total number of persons of all ages employed in the mines in the eastern district of Scotland amounted to 40,832; of this number 33,623 were employed underground, and 7209 aboveground, while the total quantity of minerals raised of each variety will be seen in the following table, and side by side the returns of the two previous years for comparison:—

Quantities of Minerals Raised.	1875.	1876.	1874.
Coal	11,667,648	11,419,419	10,182,326
Fire clay	146,837	110,923	84,305
Ironstone	826,873	803,665	701,073
Oil shale	454,592	377,108	277,210
Total	13,106,250	12,711,315	11,244,914

In the western district of Scotland the returns for the year 1876 show a total of 29,045 persons employed; of this number 23,974 were employed underground, and 5071 aboveground, the minerals raised amounting to the following quantities in 1876 and two previous years:—

Quantities of Minerals Raised.	1875.	1876.	1874.
Coal	6,997,964	7,177,888	6,606,335
Fire-clay	210,104	200,337	183,281
Ironstone	1,710,454	1,642,002	1,418,498
Oil shale	89,381	46,314	84,700
Pyrites	907	—	—
Total	9,006,810	9,067,145	8,263,014

The returns above referred to show the total production of the collieries in Scotland in the year 1876 to have been 18,665,612 tons, or an increase of 68,105 over the output of 1875, and of 1,876,951 tons in excess of the year 1874, and considering the total number of persons employed, there appears an average output per man in 1876 of 267 tons, compared with 260 tons in 1875, and 255 tons in 1874.

During the past few years the production of each district in Scotland has been separately distinguished. In the following appears the returns for the eastern district for the year 1876 and two previous years:—

District.	1875.	1876.	1874.
Lanark (part of)	7,665,117	7,485,329	6,695,227
Stirling (part of)	744,531	764,000	692,019
Linlithgow	368,911	406,374	454,566
Edinburgh	715,803	695,696	567,998
Haddington	225,031	222,399	193,954
Fife	1,688,410	1,587,428	1,390,678
Clackmannan	—	—	—
Kinross	260,845	248,092	197,774
Sutherland	—	—	—
Total	11,667,648	11,419,419	10,182,326

The returns of production in the western inspection district will be seen in the annexed abstract for each of the above-named years, showing a rapid development in the coal industries.

District.	1875.	1876.	1874.
Argyllshire	3,642,991	3,565,336	3,148,922
Argyll & Dumfries	97,139	92,711	100,749
Dumbarton	173,138	182,659	141,986
Lanark (part of)	2,651,317	2,928,170	2,766,355
Renfrewshire	157,141	152,159	181,678
Stirling (part of)	265,239	256,853	266,646
Total	6,997,964	7,177,888	6,606,335

Having thus far traced in the above years the output of the collieries in the Eastern and Western districts of Scotland, it will be interesting to carry the enquiry a step further, and show, as will appear in the annexed abstract, the production of coal in each coal producing shire of Scotland in each of the same years:—

District.	1875.	1876.	1874.
Lanarkshire	10,318,434	10,423,799	9,451,682
Ayrshire	3,649,991	3,565,336	3,148,922
Fifeshire	1,689,410	1,587,428	1,390,678
Stirlingshire	1,908,769	1,920,854	1,948,664
Edinburghshire	715,803	695,696	567,998
Linlithgowshire	368,911	406,374	454,566
Haddingtonshire	225,031	222,399	193,954
Dumbartonshire	173,138	182,659	141,986
Perth, Kinross, & Sutherlandshire	260,845	248,092	197,774
Clackmannan & Argyll & Dumfries	157,141	152,159	181,678
Argyll & Dumfries	97,139	92,711	100,749
Total	18,665,612	18,597,507	16,788,661

It is not proposed to consider either the question of the cost of pro-

duction or the value of coal in Scotland. It may, however, be generally stated that in the year 1876 the average price of coal in January was 7s. per ton receding to 6s. 8d. per ton in December, the wages being about 4s. 6d. per day, prices somewhat less than ruling in the previous year.

Scotland in the year 1876 yielded 14 per cent. of the coal raised from the pits of the United Kingdom, and of this quantity more than 3½ millions of tons will have been consumed in the manufacture of iron alone.

Mr. Ralph Moore, in his report of the eastern district of Scotland gives some interesting data of the number of coal mines in operation, and the capacity and production of collieries, &c.; the following statement for the three years ending 1876 appears:—

number of mines of all kinds, shafts, collieries, pits, and companies working coal under the Coal Mines Regulation Act, 1872:—

Mines of all kinds.	Number.	1874.	1875.	1876.
Shafts of all kinds	379	379	379	379
Collieries	314	314	314	314
Coal pits	627	627	627	627
Companies working coal	208	208	208	208

From the reports above referred to it appears that the number of companies working coal show that the collieries are year by year larger; this is evident from the annexed figures for the years 1874 and 1876, in which latter year the returns show that 25 companies in the eastern district put out more than 50 per cent. of the production:—

Tons.	1874.	1875.	1876.
1 firm raised over...	670,000	670,000	670,000
1 firm	410,000	410,000	410,000
1 firm	1,050,000	1,050,000	1,050,000
2 firms	500,000	500,000	500,000
1 firm	300,000	300,000	300,000
5 firms	1,000,000	1,000,000	1,000,000
7 firms	1,050,000	1,050,000	1,050,000
8 firms	600,000	600,000	600,000
22 firms	1,760,000	1,760,000	1,760,000
34 firms	1,360,000	1,360,000	1,360,000
135 firms	5,900,000	5,900,000	5,900,000

The greatest quantity of coal put out of a single shaft in the district in 1876 was 136,000 tons, against 145,000 tons in the previous year, while the greatest quantity of coal put out of a pair of shafts in 1876 was 212,000 tons, compared with 210,000 tons in the previous year.

While considering the coal industries of Scotland, and bearing in mind the depressed condition prevailing of late years, more especially since the year 1873, it will be interesting to observe the increase in the exports to foreign countries, as shown by the Trade and Navigation Returns, for the eight months of the present year, August, as compared with the corresponding periods of the previous years. The values of the respective quantities being down as 5,410,175, in 1877, compared with 5,976,183, in 1876, 6,373,195, in the eight months of the year 1875, ending August.

The coal, coke, cinders, and manufactured fuel exported was valued by the following States:—

Countries receiving exports.	1875—tons.	1876—tons.	1877—tons.
Russia	634,811	888,388	856,515
Sweden and Norway	459,871	721,752	811,601
Denmark	459,871	477,903	471,289
Germany	1,418,191	1,479,555	1,331,457
Holland	286,142	308,154	284,000
France	1,752,733	2,166,872	1,979,718
Spain and Canaries	438,133	508,496	601,192
Italy	634,475	847,910	792,041
Turkey	170,869	181,131	166,323
Brazil	302,234	337,123	33,283
Malta	214,063	218,019	217,948
British India	143,476	187,847	238,748
Other countries	1,818,094	2,039,426	1,841,728
Total	9,277,298	10,735,480	10,538,568

Taking the above totals and values of fuel exported in the year up to August, the average price per ton gives 10s. 3d., compared with 11s. 2d. per ton and 14s. 9d. in the two previous years, or a fall of 1s. 1d. in 1877 in price per ton of 4s. 6d. compared with 1875.

In addition to the above exported quantities a further quantity was shipped in the eight months ending August for the steamers engaged in the foreign trade amounting to 2,377,456 compared with 2,312,753 tons and 2,119,063 tons in the corresponding periods of 1876 and 1875.

ECHOES FROM THE MINING MARKET.

There has been an improvement in the market for Cornish coal, a very cheering feature in these quiet times. Early in the year the tin standards rose 1½, and although the advance itself is small it is the tendency of the movement that inspires hope, and increases confidence. Dolcoath shares have been the most influenced by the advance, as from about 1½ with a dull market the price has risen to 2½, 2½, with buyers largely predominating. If such a small rise in the market is answered by an advance of over 3s. per share in Dolcoath, what may be the result when the standards are substantially higher? It may be well worth the careful investors to watch the Cornish market just now, as quotations have generally sunk to so low a level that advances of 100 per cent. on a brisk market would be almost a matter of certainty. Without any wish to write in favour of the mine at the expense of other properties possessing also fair chances of success, we may, however, draw the attention of the investors to one in a reasonable chance of the tin market improving, the shares are well looking after. We commend these remarks to the attention of investors.

A five-monthly meeting of East Chiverton shareholders will be held on the 1st inst., when a call will be made. The mine has been looking much better of late, the lode in the 74, going towards West Chiverton, having become an important point, worth 25s. per fathom for lead. The directors' report on Penrynshire states that the probable monthly loss will be about 125s., taking the cost of considerable reduction, the difference in agency alone amounting to nearly £800, and the estimated return "50s." The report is an exhaustive one, and accompanied by two rough sketches of the workings, will prove interesting and useful to the shareholders. It will, doubtless, be found in *extenso* elsewhere.

gravel. The black
-day continues
the divided
rk, A, drop
l. The black

quartz carrying pyrites, as yet low quality stuff. The stops on the flat lode
No. 2, south of the fourth cross-cut, is yielding 5 tons per fathom; worth
12 dwts. of gold per ton.—No. 3 Level: The lode in the end north continues

1005

LINARES.—Sept. 5: Pozo Ancho: The lode in the 120, east of San Toma's engine-shaft, is large and strong, and composed chiefly of calcareous spar, with spots of iron ore. The lode in the 100, east of Warner's shaft, has improved to 1 ton of ore per fathom. In the 80, the ore is small and unproductive. The 130, a cross-cut, south of Peill's shaft, is in very hard granite. The 105, west of Peill's shaft, is opening ground worth 2 tons of ore per fathom. The 90, west of this shaft, is also worth 2 tons per fathom. The 65, in the same direction, is in hard ground, and the lode is small and poor. The 165, east of Peill's, yields 1 ton of ore per fathom. The 90, east of San Francisco shaft, consists of carbonate of lime and lead ore, the latter 1 ton per fathom. The 75, east of this shaft, is unproductive. The lode in the 100, east of Warner's shaft, is small and unproductive. The engine-shaft, below the 120, a good month's work has been done. Warner's shaft, below the 100, is going down in a lode worth 2 tons per fathom. No. 221, since, below the 90, is poor. The weightings of ore were kept up very regularly in the past month, and the stopes are without any change of importance. The various works at surface are kept on uninterruptedly, and the machinery is in good working order. The following are the raisings for September at 200 cts. per ton.

Quintero Mine.—Good. The 100, a cross-cut, south of Taylor's engine-shaft. The lode in the 90, west of Taylor's, is a little easier for driving, but still without ore. In the 80, west of this shaft, the lode is very regular, and consists of calcareous spar and quartz. In the 90 east the lode is very open, and moderately easy for driving, and contains a little ore, but not enough to value.

[For remainder of Foreign Mines, see to-day's Supplement.]

WHEAL KITTY (St. Agnes).—At the meeting on Thursday, the accounts charging four months' costs against three months' return showed an adverse balance of *£*l. The Chairman (Capt. Tensu) remarked that if they closed their accounts and stopped the mine at once their liabilities would be only 2000*l*. The 142 will soon under the run of tin ground gone down in the 130, when they had no doubt would improve in value. It appeared that 111*l*. dues had, during the past months, been paid to the lords (the Duke of Buckingham, Mr. Davey, and John St. Aubyn), whilst the adventurers had lost money, and it was determined to apply for a remission during pleasure, 122nd which is now paid being very high according to present rates. The Chairman stated, in acknowledging a vote of thanks, that they had paid 39,000*l*. or 40,000*l*. in dividends, and the suspension of work during the past two years was not through any falling off in the mine. With the improvement of tin the results soon remain dividends; but he hoped to him that they were doomed to go on as they were a little longer; but, however, without calls, if tin went no lower. He congratulated the fact, in spite of the adverse circumstances, the mine was self-supporting.

CAPTAIN ABSALOM FRANCIS
MINING AGENT, ENGINEER, AND SURVEYOR
GOSHEN, ABERYSTWITH.

Mining Correspondence.

by seven men, at 600. per ton, and 100. per ton.

The new air-shaft to sink below the surface by six men, at five fathoms. We have just cut into the lode in the bottom of the shaft where the water is gone. We hope to make good progress in sinking.

The engine will be ready for winding next week.

AUGUST 8.—John Kitto, S-pt. 7: This monthly Report: Since my last monthly report I have done no work in the #4, driving west from engine-shaft, but we have had some lead ore look so well. There has been no change in the same direction as before, but it is more productive in the upper section than in the lower part. The ground which was found equally rich in this level. The tribute pitches are about 100 ft. long, and are yielding a fair quantity of ore, and are looking pretty well. The machinery is all in good shape and running quick.

Sample about 20 tons lead ore to-morrow. The machinery is all in good

[illegible][illegible][illegible][illegible]

We conclude that a very good parcel of ore.
WEEK GORDDU.—J. G. Green, Sept. 12; I am sorry to inform you that
that we make a fresh start with the shafts, owing to the great
weight of the consequent trouble in sinking. The bargain was set to
to sink the shaft 9 ft., drive 3 ft. in the western end
access for cistern, fix bearers on cistern in position, place pumps in
and put the whole in working order for the sum of £10. In addition to
to get a tip flat or ledge at 90s. per cubic fathom. If the whole of above is
is eight weeks the men to have a premium of £1. If any sale that the
the work should have been completed before cross-cutting to the lode,
making the great feed of ore. We have saved much labour time, and
to get the line of shaft to avoid repetition of the same at our 38. I enclose
showing work included in the above bargain. We shall not be able to
to sink until we have done some more stopping to give us sufficient head-
to get to shaft, &c. No other change to notice. We are doing our utmost
samples of ore ready. It is quite impossible to drive the 24 until we get
mat, ledge cam, cistern placed, &c., as at present we have been compelled
solve a cam in the cross cut to pool back the water from the shaft, and
did only hold about 15 minutes water. We are progressing steadily but
the payment of the bargain must wait until we can put the shaft in
working cost without a commensurate quantity of work against the same.
may have room no time shall be lost, I can assure you, in prosecuting
valuable point which offers success.

EXPANDED—**King**, Sept. 10: The men are still clearing the level on the ridge, but have not yet reached the end of ground. We are still meeting small crosses, from which we are taking some good work for tin. We have a few more ready for market, and shall take it to Hayle to sample on the 11th.

MILWYD—**J. Harris**, Sept. 13: The cross-cut in the 20, driving to the level, is 8 in 8 ft, the lode met with continuing in the same direction so far that it is still sharp first. The lode is 2 ft in width, and getting in a few feet further. The lode is about 2 ft in width, composed of fine mixed with spar, and a small string in seam of lead, first seen in the drive coming down in the fore-breast. The lode is getting harder as we proceed, and by the indications I think we may ex-

the west of the mine. The thickness of the ore is more or less uniform, at 2 to 3 feet, and is made up of a mixture of quartz and lead ore. It is not uncommonly expected in driving out the levels to meet with good lead ground. The ore is found in the north of shaft, at the deepest and extreme point, is worth 1 ton of lead ore in the ground. In the other places of the mine, the ore is of no value to notice from last week. Friday next, being the

and passing through a lode very similar to what we had in the 23
 shaft, but not enough in value; the next change I expect to see here
 of ore. The 31st, or 1st, is a mass of iron ore, and is a good deal
 and, which is spare for driving. In the 23 shaft No. 1 stop, over this
 shaft better in the south end, worth on an average 15 cwt. of lead and 1 ton
 No. 3, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830,

[illegible]

ALL THE GOLD—**DR. EMME**—**THE NORTH**—**WE EXPECT**—**FOR HAVING**—**DISCOVERIES**—**DRIVE SOUTH**—**YOUNG**—**PROPERTY**—**PER FATHOM**—**SOUTH EAST**—**BEING**

under the great body of ore that we want down in the 20; change to
by other part of the mine. We are now having the necessary repairs
putting engine, so as to be able to compete with the increased quantity
which we may expect during the wet season.

CONSOLIDATED.—William Tregay, John Pope, William
Sept. 13; Pump: In the 140 west we have nine men cove-cutting north
the main lode as being developed in bringing down Cobbler's shaft below
the main lode is worth \$60, per fathom. In the 135 west end the lode (Martin's)
worth \$48, per fathom.
In the Cardozo's is worth \$30, per fathom.
In the 130 west winze the lode (Martin's) is worth 12½,
per fathom.
In the 90 west end the lode (north) is worth 12, per fathom.
In the 75 west end the lode (north) is worth \$54, per fathom. In the
north lode (north) is worth \$54, per fathom. In the 60 west end the
lode is worth 10½, per fathom. In the 60 west end the lode (north) is worth
10, per fathom.
In the 55 west end the lode (north) is worth 12½, per fathom. In
the 50 west end the lode (north) is worth 8, per fathom. We sold on Saturday
Sept. 13 10 tons @ 20 cts. 3 qrs. 10 lbs. of black tin at \$60, lbs. per ton—\$50, 1 lb. at

PENHALLS.—S. Bennetts, P. Vian, Sept. 8: The 70 east end is at present unproductive, it being just now on the downright lode, and between two sections of the main lode. The 60 east end is worth 6*l.* per fathom on the south part, the north portion of the lode being beyond the width of the end. In both the 65 east and south there is no change worthy of notice. The 45 west is worth 10*l.* per fm. Most of the other points of operation remain without much change.

PERKINS BEACH.—S. M. Ridge, Sept. 13: Chesney's new engine-shaft is sunk from surface, timbered, and all complete to the deep adit level, which is fms., and part of the ground is taken out at surface ready for the erection of engine, and the bob pit cut ready for the masons building the same, and we have tripped and enlarged the mouth of the deep level up to the new shaft, and put in a new engine-shaft, and the timbering for the 22 fms. to the new shaft, and the shaft from the eastern workings, and I have set the sinking of Chesney's shaft for the month out to nine men, and two to train the stuff at 14' per fathom, the makers paying all costs of powder, candles, and fuse, the shaft to be 10 ft. long by 14 ft. wide in the clear. I am glad to say good progress is being made in the sink, and no time should be lost in getting our engine fixed for pumping and winding purposes, as I fully expect we shall quickly have a good deal of water to come down the shaft, and as the shaft is timbered, and the water will be kept out, and as far as I can judge we are likely to have a very strong and masterly lode to sink in as we get down in the great spar lode, and I fully expect good discoveries of ore will be made as depth is obtained, and a great and lasting lease mine opened up, that is if the necessary capital is found to work the mine, and open it up proper and extend the working out in a good mining-like manner; this new shaft is being sunk 256 fms. to the west of the old engine-shaft before the new shaft was sunk, and the new shaft will be 10 fms. to the west of the old lead mine I have no doubt upon my mind will be opened up that will well reward the body of shareholders for their outlay therein if the mine shall be carried out as heretofore recommended.

FLYNLIMMON.—John Garland, Sept. 13: There is no change in any of our underground operations calling for special remark. Since my last everything being pushed on as fast as possible, all well. Samples of 20 tons of lead ore will be issued on Tuesday next, the 18th inst. We have still a good supply of water, and the machinery throughout the mine is in fair working order.

PRINCE OF WALES.—John Andrews, Sept. 12: We have at the present time no more organized standers in the hole of the mine, and the standers do not believe in the

men engaged stopping the back of the 24 on the silver lode, but there is nothing to report, as operations are being carried on by the side of the lode. The 25 is being worked by the 26, and the 27 is being worked by the 28. The 29 has been made in sinking the engine shaft, and I hope to have it down sufficient deep to drive out for a new 72 ft. level in four weeks from this date. The lode in the 60 end west has improved, and is yielding a little lead and blende, and presenting a very kindly appearance, but there is no change in the same level east. The 61 is being worked by the 62, and the 63 is being worked by the 64. The 65 will soon commence stopping in a few days in back of the 10, east of the old engine shaft. We have cleared out and repaired the shallow adit level west, and have resumed the driving of a mine. The lode here presents good prospects, and contains a large amount of blende and dressing machinery is nearly completed, and will be ready to work next week.

be ready to work next week.

Sept. 10. — **Wine.** The 109 to drive south of No. 1 winze, south of flat-rod shaft; by six men, at 15 $\frac{1}{2}$. per fathom; lode worth 1 ton per fathom. The 106 to go north of shaft, by four men, at 15 $\frac{1}{2}$. 10s. per fathom; lode worth 2½ tons per fathom. The 95 to drive south of new engine shaft, by six men, at 16 $\frac{1}{2}$. per fathom; lode twitted up, and worth at present ½ ton per fathom. No. 1 stope in the 95, north of Pettley's winze, by four men, at 6 $\frac{1}{2}$. per fathom; lode worth 2 tons per fathom. No. 2 stope in ditto, by two men at 5 $\frac{1}{2}$. 15s. per fathom; worth 3 tons per fathom. Stope in the 95, north of winze below the level of like shaft, by four men, at 5 $\frac{1}{2}$. 2 tons per fathom. Stope, north of ditto, by two men, at 6 $\frac{1}{2}$. 15s. per fathom. No. 1 stope in the 95, south of Dorricott's winze, by four men, at 5 $\frac{1}{2}$. 15s. per fathom; worth 1 ton per fathom. No. 2 stope, south of ditto, by four men, at 5 $\frac{1}{2}$. 10s. per fathom; worth tons per fathom. No. 3 stope by four men, at 6 $\frac{1}{2}$. per fathom; worth 1 ton per fathom. Rising and stoping in the 95, north of new shaft, by four men, at 7 $\frac{1}{2}$. per fathom; worth 2 tons per fathom. Stope in the 95, south of winze, south of new shaft, by four men, at 6 $\frac{1}{2}$. per fathom; worth ½ ton per fathom. The 80 to go south of level of like shaft, by four men, at 6 $\frac{1}{2}$. 10s. per fathom; worth 1 ton per fathom. Stope, north of ditto, by four men, at 6 $\frac{1}{2}$. 10s. per fathom; worth 2½ tons per fathom. The winze below the 80, north of new shaft, by four men, at 4 $\frac{1}{2}$. 10s. per fathom; worth 2½ tons per fathom. No. 1 stope in the 80, south of Wilks' winze, by four men, at 6 $\frac{1}{2}$. per fathom; worth 3 tons per fathom. No. 2 stope south, by six men, at 6 $\frac{1}{2}$. 5s. per fathom; worth 2 tons per fathom. No. 3 stope south, ditto, by six men, at 6 $\frac{1}{2}$. 10s. per fathom; worth 1½ ton per fathom. Stope north of the winze by four men, at 6 $\frac{1}{2}$. per fathom; worth 1 ton per fathom. Stope in the 80, south of old shaft, by five men, at 4 $\frac{1}{2}$. 15s. per fathom; worth 1½ ton per fathom. The 65 to go south of Stoke's winze, by four men, at 11 $\frac{1}{2}$. per fathom; worth 1 ton per fathom. No. 2 stope by two men, at 5 $\frac{1}{2}$. per fathom; worth 1½ ton per fathom. No. 3 stope by four men, at 5 $\frac{1}{2}$. 10s. per fathom; worth 1 ton per fathom. No. 4 stope by four men, at 5 $\frac{1}{2}$. 15s. per fathom; worth 2 tons per fathom. No. 5 stope by four men, at 5 $\frac{1}{2}$. per fathom; worth 1 ton per fathom. No. 6 stope, south of Stoke's winze, by four men, at 5 $\frac{1}{2}$. 10s. per fathom; worth 1 ton per fathom. North of Posell's winze, towards old shaft, by four men, at 4 $\frac{1}{2}$. 15s. per fathom; worth 2 tons per fathom. No. 1 stope in said level by four men, at 6 $\frac{1}{2}$. per fathom; worth 4 tons per fathom. No. 2 stope by two men, at 6 $\frac{1}{2}$. per fathom; worth 1 ton per fathom. The 50 to go south of Stoke's winze, south of new shaft, by four men, at 12 $\frac{1}{2}$. per fathom; to have for stopping roof 6 $\frac{1}{2}$. per fathom; lode worth tons per fathom. Winze in 65, on east loie, by four at 11 $\frac{1}{2}$. per fathom; worth 1 ton per fathom. Winze below middle level, on east loie, by three men, at 11 $\frac{1}{2}$. per fathom; worth 1 ton per fathom. Winze on east loie, by four men, at 5 $\frac{1}{2}$. per fathom; worth 1 ton per fathom.

wintry, by four men at \$8 per fat-ton; worth 1 ton per fat-ton.
 20 swine, C.W.s., at \$12 per fat-ton; worth 1 ton per fat-ton.
 The roads are better than last year, owing to springing down the loads
 on the sides, and the intermediate level, east of the cross cut, has a very good
 range of lead, worth about 25 c.w.s. to the fathom, but there has been no other
 change of importance in any part of the mine since the date of my last report.
 The wet weather has made much against our surface works, and particularly the
 buildings, but the wheel-pit is finished, and the crusher-house commenced, and
 with a month's fine weather we shall have all the mason work completed, and most
 of the dressing machinery set up, so that it will be ready to start as soon as the
 actors present with this sort of work in weather such as we have had during the
 past six or eight weeks. There is, however, a little improvement at present, which
 sincerely hope will continue.

SOUTH ROMAN GRAVELS.—J. W. Powning, Sept. 13. Shelfeld: There is but little change in the 45, east of shaft, since I last wrote. The cavity is yet filled with protoxide of iron and fine spar, and there is also some fine lead, but not sufficient to save. This end is letting out a very great deal of water, and the hanging side, as well as the roof of the level, is heavy, and have to be very strongly timbered: but the water is not so much as it was. The level is now about 12 or 13 fathoms below the surface, and soon have a good lode—in fact, I have been expecting it for some weeks past. We have struck into an open cavity in the 45 west, and can see for about 12 or 15 ft.; the open is about 18 in. wide at the mouth, but opens wider outward. There appears to be a wide spar lode on the footwall or under the cavity, but we have not shot down any of it: we hope to do so in the course of a

87. **HARMON.**—John Kitto, Sept. 7: I have nothing new to report to you since the date of my last. Very good progress has been made during the past month in every part of our underground workings, with the exception of the 45 cross cut south; in the underground workings of the 45, the progress has been very good, and the ground in drift has not been so great as usual, but I do not expect this sort of ground to be of long continuance. The 35 west and 67 east are both looking very kindly, and I am daily expecting a further improvement. In fact, judging from appearances, we might any day strike into a good course of ore. The stop above the 35 is still yielding good ore, and we have a large heap of good old stuff accumulated on the dressing floors.

ST. PATRICK.—W. Francis, Sept. 12: In sinking under the 120 yards cross-cut north from whim shaft there is a "sticking" of mineralised compounds 15 in wide, in which good stones of ore are being found. I expect this part will be fully proved in sinking a fathom or so deeper. The 60 yards cross cut progresses well. The beds are dipping fast, and I expect a vein shortly well charged

TANKERVILLE.—A. Waters, Sept. 13: To sink for fork, out plat, and make a winch ready for sinking Watson's shaft below the 192, by nine men, for the sum of 517. The 192, drive east, by six men, at 15¢ per fathom; lode 5 fms. west, by six men, at 14¢ per fathom. To sink level, to go west of shaft, by six men, at 14¢ per fathom; lode worth $\frac{1}{2}$ ton per fathom. This end is 3 to 5 fms. from the main west run of ore. No. 1 stope, in back of the 192, by six men, at 6¢ per fathom; worth 1 ton per fathom. No. 2 stope, by six men, at 6¢ per fathom; worth 3 tons per fathom. No. 3 stope, west of winze, by six men, at 6¢ per fathom; worth 2 tons per fathom. To strip down the side of the 180 west, and drive the end on footwall course of the 180, by six men, at 17¢ per fathom; worth 1 ton per fathom. The 180 east, by six men, at 14¢ per fathom; worth $1\frac{1}{2}$ tons per fathom. The winze in the 180 east, by six men, at 17¢ per fathom; worth $2\frac{1}{2}$ tons per fathom. The stope in back of the 180, east,

No. 117, per fathom; by four 2½ tons, at 67. per fathom; lode worth 2 tons per fathom. The west of winze, by four 2½ tons, at 67. per fathom; lode worth 2 tons per fathom. The No. 118, a level, east of shaft, by four men, at 87. per fathom; lode worth 1½ ton per fathom. No. 2 slope, by four men, at 87. per fathom; lode worth 1½ ton per fathom. The 187, to go west of shaft, by six men, at 127. per fathom; lode worth ½ ton per fathom. The drift west of Preece's winze, below the 152, to go behind Watson's shaft, by four men, at 147. per fathom; worth 1 ton per fathom, and improving. The 152 cross-cut, to be continued north of No. 1 side lode, by four men, at 127. per fathom. The 130 cross-cut, to go north to No. 1 side lode, by two men, at 107. per fathom. Stopping and rising in the 130, west of shaft on south lode, at 77. 104. per fathom; lode worth 1½ ton per fathom. The 120, to drive east of Maddox's cross-cut, on old lode, by four men, at 137. per fathom; worth 1½ ton per fathom. The 120, to go west on south lode, by four men, at 137. per fathom; lode yielding stones of ore. The winze in the 110 west, on south lode, by four men, at 147. per fathom; worth 1 ton per fathom. The 92, to go east of cross-cut on old lode, by six men, at 127. per fathom; lode 2½ ft wide, stones of ore. The slope in the 82, east of shaft, by four men, at 247. per fathom; worth 1 ton per fathom. The 42, to go east and south of No. 1 side lode, on new lode, in east end of old mine, by four men, at 97. per fathom. East end worth 15 cwt. per ton of ground and blende.

tion: west end yielding tons of lead ore and blende. **THE DAILY**—Thomas Watson, Sept. 7: "The men have been cutting the vein for some time. They have not cut through it far enough yet to prove its strength and throw. I do not think that we have driven far enough yet to cut the proper vein.—Hopkins's Level: We have more vein here in the level forehead, but part of it will apparently be thrown off and will not be in the vein.—Surface Work: We have now got the whole of the metal work and shafting for jiggling machinery to the mines; the blacksmith is making bolts for it. I expect we will get a start to fix part of it next week. We get our ore-dressers to work again next week. **THE** **WEEK**—Ore Dressing: The ore is better than that of last week. The

TREBEIGH CONSOLES.—J. Gifford, Sept. 12: Ward's engine-shaft is down 12 fms. 2 ft. below the 30, and is set to nine men, to sink and make good to 15 fms. below the 30, or to a 45 fm. level from surface, at 197. per fathom, where we intend cross-cutting to the lode. The ground still continues favourable for progress and strongly mineralised.

TREBEIGH LODE.—William Goldsworthy, Sept. 13: There is no change to be made in the plan, since last report.

TYN-Y FRON.—E. Jones, Sept. 12: We are continuing the clearing of the adit level, east of main cross-cut, which will be finished in a day or two, when Capt. A. Francis will be here to dial the mine. It seems that the lode has been missed in the eastern forebreast by former workers, as it is strong up to a certain point where they appear to have left it, and driven out of the lode in soft ground. We shall put in some holes to prove this, and we will report on same fully next week.

VAUGHAN—Sept. 13: The deep adit level east has been extended during the past month 8 ms, 4 ft., in a lode containing occasional spots of lead and blende. This level will now be 60 ft. higher than the surface, and it reaches under the run of ore ground met with in the 32 ad level. The rise over the 32 has been 14 ft 1 in. 3 ft. 4 in., and communicated to the winze in a large lode, yielding 1 1/4 ton of lead ore per fathom. The winze under the 20 was sunk 3 ft., in a lode yielding 1 1/2 ton of lead ore per fathom, and communicated to the rise, which has been opened up along the strike, and the level carried down from 1 to 1 1/2 tons, and the 20 the part of the ore carried is 6 to 7 tons of lead ore, and 1 1/2 tons of blende ore per fathom. At surface the masons have completed the building of the ore pass, and are now employed in repairing crusher house. The carpenters have completed the erection of two water-wheels and grating, with picking-table, and are now engaged in making a new bonnet for 40-ft water-wheel, and the millwrights are at work on the same. It is expected that by the middle of the favourable weather shall soon complete the erection of the dressing machinery sufficiently to commence dressing ore.

WEST ASSHETON.—John Craze, Joel Manley, Sept. 13: No change in any part of the mine since last report. Setting report next week. We have shipped the ore sold to Messrs. Sheldon, Bush, and Co.

WEST GODOLPHIN.—John Pope, Sept. 3. Monthly Report.—On entering the shafts at the 70 have cut the ground for fixing bearers and cistern, and are now engaged fixing the same. The 70, driving north, by eight men; the lode is 3 ft. 6 in. wide, worth 5 $\frac{1}{2}$ per fathom; distance worked, 12 fms, producing tin, very kindly lode. The 60, driving north, by two men; small; distance worked, 10 fms.—Wilson's: The 60, driving east, by two men; the lode is 1 ft. wide, producing low stuff; the lode is 3 ft. 6 in. wide, worth 3 $\frac{1}{2}$ per fathom; distance worked, 60 fms. level east by six men; the lode is 10 ft. wide, worth 10 $\frac{1}{2}$ per fathom; producing tin. A stope in the back of the 60 west, by six men; the lode is 6 ft. wide, worth 15 $\frac{1}{2}$ per fathom for tin and copper. A stope in the back of the 60 west by six men; the lode is 3 ft. 6 in. wide, and worth 7 $\frac{1}{2}$ per fathom.—producing tin. A stope in bottom of the 50 west by six men; the lode is 12 ft. wide, worth 25 $\frac{1}{2}$ per fathom for tin and copper. Ditto, by six men; the lode is 7 ft. wide, worth 12 $\frac{1}{2}$ per fathom for tin and copper. Ditto, by six men; the lode is 6 ft. wide, worth 12 $\frac{1}{2}$ per fathom for tin and copper. Ditto, by six men; the lode is 4 ft. 6 in. wide, worth 9 $\frac{1}{2}$ per fathom for tin. A stope in bottom of the 50 west by six men; the lode is 5 ft. 6 in. wide, worth 10 $\frac{1}{2}$ per fathom for tin. A stope in back of the 50 west by four men; lode 6 ft. wide, worth 7 $\frac{1}{2}$ per fathom for tin. A stope in back of the 50 west by two men and two boys; the lode is 2 ft. 6 in. wide, worth 4 $\frac{1}{2}$ per fathom or tin.—Pink: The 50, driving north, by six men; the lode is 1 ft. wide, low priced stuff; distance worked 10 fms.—Wilson's: deep adit is driven north, by six men; the lode is 3 ft. 6 in. wide, worth 9 $\frac{1}{2}$ per fathom; distance driven, 19 fms.—producing tin. There are six men now employed stripping the sides of the 60 east, on Wilson's lode; towards the bottom of the level the men are breaking good quality stuff. There are also four men cutting ground in the 60 north, on the counter sole, for building a dam to keep the water back while we are fixing the new pitwork at the 60, and sending the old water back to the 50. We have two pieces of main rod to send underground to complete our new line of main rods, and are now dressing the new pitwork underground next week. The engineers are getting the new engine, and I think we shall be in order to work against Michaelmas. We are pushing on dressing our copper ore as fast as possible.

— John Pope, Sept. 3: Last night, about twelve o'clock, one of the cheeks of the flat-rods which connects the rod to the tend-off bob, near the engine, broke. We repaired this, and got in readiness to work against seven o'clock this morning, when we discovered that the pole in the 30 had gone down so far that it stuck in the bottom of the case, which took us till twelve o'clock to get up in its proper place. The engine is working now, but the water has risen to the back of the 60; this, with the very wet weather we are getting, is making very much against our getting on with the new work.

WEST GOGGINAN.—John Kitto, Sept. 7: Since the date of my last report we have intersected the north part of the lode in the 36 cross-cut, where it is very strong, and contains a little ore, but so far it is not rich; we have, however, only just commenced to drive west on its course. We have also struck the same part of the lode in the 48 cross-cut, but have only just broken into it, and cannot yet say whether it is rich or not. It is, however, more ore in sight, but I shall be able to say more about it in a few days. The lode has good prospects for the 36 and 48 driving west, and altogether I consider our prospects have much improved.

WEST ROSKEAR.—H. Stephens, W. Bennett, Sept. 13: There is no particular change in the lode since our last report. The sumpten have nearly finished cutting the ground for the bearers and cistern, which we expect to have in their place

WENT TANKERVILLE,--Arthur Waters, Sept. 13: Setting Report: The 86 to south of boundary shaft, by six men, at 14 $\frac{1}{2}$ per fathom; the lode is improving. The 75 to go south of shaft, by six men, at 16 $\frac{1}{2}$ per fm; the lode is 8 ft. wide, at 16 $\frac{1}{2}$ per fathom. The 63 cross-cut back to the 75, north of winze, by six men, at 6 $\frac{1}{2}$ 10s. per fathom. worth 15 cts. per fathom. The 59 winze below the 63 level, just in front of the 86 end, by four men, at 12 $\frac{1}{2}$ per fathom; worth at present 7 cts. per fathom. The 63 cross-cut to go east through No. 2 lode (the wall of which is just reached), by two men, at 7 $\frac{1}{2}$ per fathom; as far as can be judged there is a strong lode here. The slope in back of the 63 south by two men, at 1 $\frac{1}{2}$ 10s. per fathom; the lode is worth $\frac{3}{4}$ ton per fathom. No. 2 slope, by two men, at 3 $\frac{1}{2}$ 10s. per fathom, worth 1 ton per fathom. No. 3 slope, by two men, at 6 $\frac{1}{2}$ per fm., worth 25 cts. per fathom. Two men rising and stoping in said level 100 ft. below the 63, by two men, worth 1 ton per fathom. Two men making a trial in the 63, adjoining the shaft, where a part of the lode is striking out on west side of the level. The slope in back of the 59 south by two men, at 4 $\frac{1}{2}$ per fathom, worth 1 ton per fathom. We shall sample next week.

When we reach 145 fathoms, we shall commence next week, we shall have to haul the next Taylor's shaft to sink below the 145, and to carry down ground on the new side of the trip; but we shall top down the ground for 16 ft. in length, 18 ft. wide, and 8 ft. deep; this will be for shaft and plat—price 14¢ per cubic fathom; when this work is complete, we hope to be able to start the sinking without further hindrance in cutting flats. We shall require rather extensive flats, as no doubt large quantities of stuff will have to be brought to this 145 fm. level plat. The lode in the 145 and west is 5 ft. wide, yielding 4 tons of ore per fathom. The lode in the 135 and west is large, and will yield 3 tons of ore per fathom. The No. 5 winze below the 125, west of shaft, is 6 ft. wide, yielding 5 tons of ore per fathom—a strong fine lode. The lode in the 125 and west is 15 in. wide, and not so good as last reported, only yielding about 1½ tons of ore per fathom. There is no alteration in Richards's shaft or in the ends at this shaft since our last report. The day of sampling is on Tuesday, and at this time we have obtained 50 tons of tributary ore and 280 tons of main place ore, we calculate on sampling about 50 tons of tributary ore and 280 tons of main place ore, making 330 tons, and we calculate that 280 tons of it will be from the No. 35. We have the masons employed at Richards' about the new boiler, and a party of men putting the pipes in the 95 west from Taylor's shaft. Next week we shall begin about the steam capstan at Richards's shaft, and to hasten on the job.

WEST WYE VALLEY.—John Killop, Sept. 7: There is nothing new in the 40 fm. level driving east from the old engine shaft, or in the cross cut driving out through the lode near the end of this level, except that the ground in the former is easier for driving, and greater progress than usual is now being made. In the same level (40) at Brooke's shaft the lode has considerably improved, and the eastern end is now worth 4 tons of lead ore to the fathom, and the end west of same shaft is worth 1½ tons per fathom. I am pleased to be able to say that our prospects here are exceedingly good, and that I have scarcely ever seen a lode showing better results in driving. The ground is getting so good that it is possible to work as well with the surface operations and machinery for dressing, but the wet weather is making much against us, and it is impossible to make any progress, but it looks rather more favourable now.

in progress. On the 10th of March, 1890, Edward McVey, Sept. 12, The engine-shaft has been sunk 10 fms. below the 193 in a rich lode, which has yielded in stuff of an average produce of about 120 lb. of tin to the ton of stuff. We have sunk and topped 50 fathoms of ground, which has produced over 2000 tons of stuff, or about 104 tons of tin, being over 2 tons of tin per fathom, which at the present low price is prevailing in the market, meeting about equal to 75¢ per fathom. Taking the average of the shaft, which is 10 fms. and 100 fms. deep, it would be 150¢ per fathom, and it is still as rich as ever. We shall now proceed to drive east and west on the north part of the lode as soon as the skip-road is completed, which we hope it will be in three weeks after we have fixed our new lift and rods in the engine-shaft, thus enabling us to raise our tinstuff in less time and with less cost. We have also commenced driving south through the lode to ascertain its size and richness, which has not yet been ascertained in any part of the mine, nor in our neighbour's mine—East Pool—where a cross-cut has been driven 7 fms. at the 180 without finding the north wall.—New Shaft: Since last meeting the shaft has been sunk to the 125 by two men and one boy. There are two men and two boys sinking a winze at the 125, and the shaft is being driven down to the 150 and 160 under the same, so that we hope to put this shaft down to the 180 in a comparatively short time and little cost, which will greatly facilitate the workings of the mine, and give us excellent ventilation.—Dressing Flues, &c.: We hope to complete the stampan flues, erection of calciner and flues, also to get the tin dressing flues so far on as to be able to dress the tin in about three months with the aid of the adjoining mines, by which we hope to get its full value. The mine continues to improve in depth, and from what we see in our mine and East Pool the shareholders have a rich reward for their long perseverance and outlay. We hope to pay our working cost independent of new erections at the present price of tin, and

with an average price-*n* good *l* profits to the shareholders.
WHEAL CREBOR.—J. Andrews, Sept. 10: The following was our setting on Saturday: To drive the 120 end, east of winze, by six men, at 7*l*. 1*o*s. per fm. lode 3*ft*. wide, worth 2*o*s. per fathom. To stoppe the back of the 120, by six men, at 7*l*. 1*o*s. per fathom. To drive the 108 east, by four men, at 5*l*. 1*o*s. per fathom. To drive the 108 east, by four men, at 5*l*. 1*o*s. per fathom: the lode here is opening out very encouraging, and is now 3*ft*. wide, worth 12*o*s. per fathom. The west stope in the back of the 108 was set to six men, at 4*l*. 15*o*s. per fathom; lode 4*ft*. wide, worth 10*o*s. per fathom. The east stope in the back of the same level was set to six men, at 3*l*. 1*o*s. per fathom; lode 5*ft*. wide, worth 12*o*s. per fathom. To drive the 72 north, by two men, at 5*l*. per fathom. To drive the 72 south, by two men, at 5*l*. per fathom. As we are carrying 3 tons of stone out of the lode, which yields 3 tons of munda per fathom, with good tones of copper ore inter-laid—a very promising lode.

WHEEL GRENVILLE.—T. Hodge, Sept. 13: The lode in the 150 east end is looking more promising, producing occasionally good stones of tin. There is no change in the other bargains worthy of any note. The heavy parts of the 80-in engine are fixed. This, and all other surface work, is being pushed on as fast as possible.

WHEAL KITTY (St. Agnes).—8. Davey, R. Harris, Sept. 8: New Shaft, Pryor Lode: We have resumed the driving of the 154 west; the lode is producing good stones of tin, and we look forward to an early improvement at this point. The lode in the 142, driving west of shaft, is 5 ft. wide, and worth for tin 9/ per fathom at this point also there are indications of improvement. The lode in the 145

driving east of shaft, is 1½ ft. wide, and worth for tin 5½ per fathom. The lode in the 130, driving west of shaft, is 2½ ft. wide, and worth for tin 9½ per fathom. The lode in the 113, driving west of shaft, is 2 ft. wide, and worth for tin 8½ per fathom. The lode being stopped down to the west of the rise in the back of the lode is worth for tin 12½ per fathom; we shall re-sume driving the end in a week or two. The lode in the 1-0, driving west of engine shaft, on the old lode, is worth for tin 8½ per fathom. The lode in the 90, driving east of engine shaft, on the old lode, is worth for tin 6½ per fathom.

WHEEL NEWTON.—H. Bennett, Sept. 13: The lode in Cook's shaft is 20 in. wide, consisting of carbonate of iron, prisms, and sulphur-mundic, with good stones of silver ore; it has every appearance of an early improvement. The 40 end, we

slow of sale, and unchanged in value.—**TIN PLATES** sell to a moderate extent at a moderate rate.

There is no particular change to notice in the **MINTING MARKET** this week, though the quotations for a few tin and copper mines show no change whatever. The fortnightly statement of the account has again been very moderate, but more was taken up this time than on a few previous occasions.

TIN MINES.—The tin standard advanced 1½ per ton on Tuesday and caused a slight, but temporary, demand for tin shares, and improvement in quotations, but very little actual business was transacted. The Dutch tin sale comes off on the 26th, and will consist of 21,500 slabs, against 23,031 slabs at the July sale. This is a falling off in the Banca supplies. Carr Brea & Co. are no longer

During the week the full details of the decision in the Eureka Company against the Richmond Company has been given, and an abstract will be found in another column. That the decision is correct in law and in strict accordance with the principles of equity as recognized both in this country and America is reasonably be doubted after reading the sections of the

code bearing upon the subject and the explanation of the... and it is, therefore, to be hoped that the shareholders will... themselves to be induced to continue a useless litigation, especially as it appears to be a general opinion that, in the... of mineral which, if judiciously worked, will continue... the shareholders fair profits for some years to come. The... of the case will be more fully referred to in next... *Miner's Journal*. A local contemporary remarks that it is... that one or other of the great companies—Eureka and...—has been of greater benefit to this community. The... involved was of far greater moment. Each has contri-... to make this the second town in the State. The... that all else is dependent upon the mining interests, and the... litigation furnishes a striking illustration of what... of towns in Nevada would be without the mines... But we are sanguine that, notwithstanding the loss of... the Richmond is still a great mine. If, as has... been established by the highest and most distinguished tri-... in America, save the Supreme Court itself, there is but one... and that one of mammoth proportions, passing through... Hill, it necessarily follows that the Richmond still possesses... share of it, which may prove of fabulous value as depth is... and explorations are extended. Certainly if the theory on... the case was decided by the correct one, and the ledge does... go down indefinitely, as a mining proposition the Rich-... is not badly worsted. Where was a shareholder of the Rich-... with more than forty Potts' chambers. And herein is how the district... is permanently benefited by the decision just rendered.

The United States Law of 1836 authorised the grant of patents... for veins or lodes. The patentee received the exclusive right... that particular lode, but could not touch any other met with... as the latter might be patented to another owner. This... law was repealed in 1872, when it was enacted, retro-... and prospectively, that the patentee should have a right... within the surface boundary lines mentioned in the... surface boundary lines being assumed to continue... downwards to the centre of the earth. The representa-... of the Richmond Company, ignoring the Act of 1872, and re-... of the Act of 1836, appropriated ore which they knew at the... to be within the Eureka vertical boundary lines, and, as a con-... will now have to refund their neighbour's property, which... to be worth 500,000. It is probable that from this... cost of returning, &c., will be deducted, as similar prin-... prevail in English and American courts; and the best course... concerned would be for all litigation to be stopped, for the... to be refunded to the Eureka to be settled by arbitration,... an arrangement to be made for its payment by instalments... over a series of years. By this means the Richmond... might continue to pay dividends to the shareholders, and... would have serious cause of complaint.

The chief features in the foreign market towards the close to-day... was an active demand for Frontino and Bolivia and Flag-... mines. The Flagstaff news is that during the past... a net profit has been realised of \$15,000, and that the ore is... in richness. Richmond, 4 1/2 to 4 3/4; the latest telegram... the mines is decidedly satisfactory as showing that active op-... have been resumed. The opinion seems general that the... have an excellent property within their own boundary... the days run with two furnaces gave \$27,000 from 500 tons of... The third furnace will be started as soon as the fourth level is... The mine is looking well. New Zealand Kapanaga, 1 1/2... the agents' report, received per the mail this week, is con-... to be of a satisfactory character, and worthy the attentive... of all concerned in the development of the property... Copper, 37 to 39; the July mining reports state that the new... continues to look favourably, and the stopes are yielding well... to look were—from Ookiep, 950 tons of ore of 33 per cent... and from Spektakel, 18 tons of ore of 28 per cent. produce... of lading have been received for 1721 tons. At the last two... 1180 tons of the company's ore has been sold for about... and 730 tons more will be sold on September 25. Compared... the average price for the whole Swansea sale on each date the... received a very high standard for their mineral... John del Rey, 300 to 320; the latest telegram received, dated... Sept. 11, states that the produce for the month of August... of the value of 16,820, the ley of the ore being 8.6 oits... The detailed advice state the profit for July to have been... John del Rey, 300 to 320; the latest telegram received, dated... Sept. 11, gives the produce for the month of August... 300 oits.

Sept. 23 to 34; the confirmatory meeting for the issue of... is called for next week. The reports from the mine by... in to-day confirm the advices as to the discoveries of ore... mines. Condes, 23 to 34; the report states that Secombe's... producing ore worth upwards of 100 oits. of silver per ton... 300 per fathom. Exchequer, 4 to 5; there is an expectation... quarters of a satisfactory amelioration of the company's... condition, but it is said that nothing is known officially... the subject. I. X. L., 3s. to 5s.; the advices state that the... is down 108 ft. from the 200 station; the north drift is... 002 ft. from the cross-cut in the 200 ft. level, and in the face... is improving, well defined, carrying a considerable quan-... of low-grade ore. A tank station is started in the 300, the... being too heavy to admit of any progress in sinking. The... at the bottom of the shaft lead the agent to believe they... a ledge, there being small streaks of ore, and water pour-... from them.

John Buttes, 1 1/2 to 1 3/4; Plumas Eureka, 2 1/2 to 3 1/4. The Sierra Buttes... prospects for August were \$26,442, and the total California ex-... including cost of mining and milling, \$21,136. The Plumas... mine receipts for the same period were, including sul-... \$48,550; and the total California expenses, including cost... and milling, \$19,615. A ledge 4 ft. wide, of 85 ore, has... discovered in the seventh level of the Sierra Buttes Mine... and California, 4 to 5; the August clean-up at the Original... Mine was \$10,000; the mill has been temporarily stopped... of water supply. Mr. W. Johns reports that the mine... contains two years' supply of ore.

John del Rey, 1 1/2 to 2; all the arrangements for the consolida-... of the 04 Terrible Mine with the extensive series of claims... thereto, belonging to Messrs. Hamill and Chaffer, have... carried into effect. The company now owns 56,000 ft. of... claims. The joint properties are under the management... of the property. The receipts from sales of ore... sufficient to meet this large pay-sheet and the merchants'... The opening of a railroad to Georgetown on Aug. 1 is calcu-... to benefit the company largely, principally through a reduc-... cost of freight on ore and supplies of all kinds... of Gold Washing shares have been without feature... 3 to 3 1/4; the last blast of powder (10 tons) is reported... broken not less than 200,000 tons of auriferous gravel, the... of which is now immediately available for washing, though... part of it can be dealt with this season. The Chairman, who... the spot, reports the mines in splendid condition for next... operations.

John del Rey, 5 1/2 to 6 1/4; the timbering of the shaft has been completed, and... expected that the pit-head and whim will be in working... about the end of the present week, when sinking will be re-... Dr. Oxland has made a favourable report upon the practi-... of successfully treating the ores.

Many mines have shown more activity, with somewhat improved... many transactions consisting of re-purchases by previous... Van, 30 to 32; the 105 continues to look well, as... In the same level east the rush of water from the... continues to impede work. Satisfactory progress is being... with the new halvan floors, and the sinking of the engine-

shaft is rapidly progressing. All other work, both underground and at surface, going on as usual. Grogwinston, 24 to 34; the No. 1 lode, in the eastern workings, is producing strings of ore, and is likely to lead to something good. All other points looking fairly well. Wye Valley, 3 to 4; the ore ground in the east end of the adit is looking well, and the sinking of the new shaft in this part of the mine is making good progress. The annual meeting will shortly be held. West Wye Valley, 2 to 3; the completion of the machinery is again delayed. The lode in the 40 east is considerably improved. South Cwmystwith, 3 to 4; a good branch of ore, worth over 1 ton per fathom, has been cut in the intermediate level. Prospects at all other points are described as being as good as ever.

Saint Harmon, 2 1/2 to 3; the underground workings are going on very well, particularly at the 35 east and 67 west, at both of which points some important improvements are daily expected. The stope in the 35 is yielding good ore. Llanilloes, 1 1/2 to 2 1/2; 20 tons of lead have been sampled this week. The 84 is being driven towards the ore ground which has been so productive in the levels above, and prospects are most encouraging. Red Rock, 1 1/2 to 2 1/2; the engine-shaft is being steadily sunk, and will reach the 72 in about three weeks from now. The 60 west has improved, as also has the 10 east, and both are producing good lead and blende. A stope is about to be started in the back of the 10 east. Caron, 2 to 2 1/2; the whole of these shares have, it is said, been allotted, and the works will be commenced at once.

Pateley Bridge, 2 to 2 1/2; the Rake vein in the 30 east is reported as rapidly improving. There is only some 5 or 6 fms. to drive to get under the rich course of ore gone down in the 20. Other parts of the mine unchanged. West Pateley Bridge, 1 1/2 to 2; the lode in No. 2 shaft is described by the manager as one of the finest he has ever seen at the same depth in the district. The lead crusher is nearly completed, and dressing will be commenced in the course of a few days.

Subjoined are the closing quotations:—
Aasheton, 3 1/2 to 1 1/4; Carn Brea, 20 to 22; Devon Great Consols, 3 1/2 to 3 3/4; Dolcoath, 23 to 25; East Caradon, 1 1/2 to 3 1/4; East Van, 4 1/2 to 5; Glyn, 3 1/2 to 3 3/4; Great Laxey, 20 to 22; Hington Down, 3 1/2 to 3 3/4; Leadhills, 5 to 5 1/2; Marke Valley, 3 1/2 to 4; Parys Mountain, 4s. to 6s.; Pateley Bridge, 2 to 2 1/2; Pennerley, 3 1/2 to 3 3/4; Penstruthal, 3 1/2 to 3 3/4; Roman Gravel, 9 to 9 1/2; Tankerville, 6 1/2 to 6 3/4; Tin-croft, 9 to 10; Van, 30 to 32; Van Consols, 3 1/2 to 3 3/4; West Aasheton, 3 1/2 to 4; West Caradon, 9 to 11; West Pateley, 1 1/2 to 2; West Tankerville, 3 1/2 to 4; Wheal Grenville, 30s. to 35s.; Almada and Trito, 3 1/2 to 3 3/4; Argentine, 2 1/2 to 3 1/2; Birdseye Creek, 3 1/2 to 4; Blue Tent, 3 to 3 1/2; Cape Copper, 3 1/2 to 3 3/4; Cedar Creek, 3 1/2 to 3 3/4; Chontales, 3 1/2 to 3 3/4; Colorado Terrible, 1 1/2 to 2; Condes of Chili, 2 1/2 to 3 1/4; Don Pedro, 3 1/2 to 3 3/4; Eberhardt and Aurora, 4 1/2 to 5 1/2; Exchequer, 3 1/2 to 3 3/4; I. X. L., 3s. to 4s.; Flagstaff, 2 1/2 to 3; Frontino and Bolivia, 2 1/2 to 3 1/4; Hultafall, 5 1/2 to 6 1/4; Javali, 5 1/2 to 6 1/4; Kapanaga, 1 1/2 to 1 3/4; Last Chance, 3 1/2 to 3 3/4; New Pacific, 3 1/2 to 3 3/4; New Quebrada, 2 1/2 to 3 1/4; Pestana, 3 1/2 to 3 3/4; Plumas Eureka, 2 1/2 to 3 1/4; Port Philip, 3s. to 4s.; San Pedro, 3 1/2 to 3 3/4; Sierra Buttes, 1 1/2 to 1 3/4; South Aurora, 3 1/2 to 3 3/4; Teocoma, 3 1/2 to 3 3/4; United Mexican, 1 1/2 to 2; Oregon pref., 4 to 4 1/4.

COLLIERIES.—The fortnightly settlement has chiefly engaged attention during the week, and no business of any consequence has been transacted in colliery shares, consequently prices have undergone scarcely any change. Increased activity is recorded from several of the chief fuel districts, and a decided improvement in the iron and steel trades has given an impulse to the coal markets. Steam and gas coals are in better demand, and although in some cases buyers have renewed their attempts to force prices still further down, they have been met by firm resistance. In Yorkshire the iron trade shows a very clear improvement, especially as regards steel rails. Several of the iron founders of this district are full with orders which will keep them busy for the next six months, and the Indian Government is a buyer of 12,000 tons of rails. It appears that the 2500 additional miles of railway about to be laid in India will require 125,000 tons of rails, and these, as well as iron sleepers and locomotives, have been ordered from various firms in different parts of the country. Reports from Alami are satisfactory. The permanent levels at section C are being carried on, as for some time past, in splendid coal, without intersecting any "fault." At section D the main engine pit is by this time into the coal, and a great body of coal can be opened out here. The prospects of the colliery would, therefore, appear to be excellent. The shares close at 4 to 4 1/4. At Llay Hall the output increases, and the new engines work satisfactorily. The price obtained at the pit's mouth for so good a coal is decidedly low, and efforts should be made for a better market. The clay works are yielding good profits, and the quantity of clay appears to be inexhaustible. The permanent levels at section C are being carried on, as for some time past, in splendid coal, without intersecting any "fault." At section D the main engine pit is by this time into the coal, and a great body of coal can be opened out here. The prospects of the colliery would, therefore, appear to be excellent. The shares close at 4 to 4 1/4. At Llay Hall the output increases, and the new engines work satisfactorily. The price obtained at the pit's mouth for so good a coal is decidedly low, and efforts should be made for a better market. The clay works are yielding good profits, and the quantity of clay appears to be inexhaustible.

The shares are quoted at 9 to 10, but few dealings are recorded. Mold Argued close at 2 1/2 to 3 1/4. Although a large quantity of coal is daily sent off per rail, prices are miserably low. The quality of the "main" coal here is reported to be very fair. At Chapel House the prices obtained for coal continue to be most satisfactory, with the exception of a slight reduction in slack, owing to the stoppage of brickmaking for the season on account of the inclement weather. This, however, can make little difference to a colliery where scarcely any slack is made, and we hear that the average profit per ton is well maintained, while sales have increased. The new 16 ft. shaft is down about 282 yards. In South Wales the Yaiscedwyn Works, to which we referred last week, continue working, and, as we hear, with very satisfactory results. There is no doubt it is a fine property, and the coal and iron which can be turned out of it are of so superior a quality that, with anything like good management, it ought to prove a very profitable concern. New Sharston Preference are quoted, 3 1/2 to 4; Newport Abercrom, 2 to 2 1/2; Cardiff and Swansea, 1 to 1 1/4; Cakemore, 1 1/2 to 2 1/4; Thorpe Gawber, 2 1/2 to 3.

At Swansea Ticketing, on Tuesday, 3640 tons of copper ore were sold, realising 25,804 1/2s. The particulars of the sale were—Average standard for 9 per cent. produce, 81 1/2s. 9d.; average produce, 12 11-16; average price per ton, 7 7s. 3d.; quantity of fine copper, 462 tons 17 cwt. The following are the particulars of the two last sales:—

Date.	Tons.	Standard.	Produce.	Perton.	Per unit.	Ore copper.
Aug. 28.....	2373	82	9	12 1/2	7 10	11s. 10 1/2d. £ 69 5 6
Sept. 11.....	3840	81	9	12 11-16	7 7 3	11s. 7 1/2d. £ 67 18 3

Compared with the last sale, the decline has been in the standard 1 1/2s., and in the price per ton of ore about 3s. 6d. Messrs. Richardson and Co. report that the Union ore gave a produce of 5, and sold at 10s. 2d. per unit; Cape produce 31 1-16, per unit 12s. 0 1/2d.; Betts Cove produce 9 1/2, per unit 11s. 3 1/4d.; New Quebrada produce 13 1/2, per unit 11s. 9 1/2d.; Algerian produce 7 1/2, per unit 11s.; Caverna produce 7 1/2, per unit 11s. 0 1/2d. On Sept. 25 there will be offered for sale about 2750 tons of ore, from Betts Cove, Cape, New Quebrada, Carracedo, Almodovar, Portugal, Aljustrel, Tan-y-Bwlch, and elsewhere.

A petition has been presented to the High Court of Justice for the winding-up of the New Dale Mine (Limited).

Mr. George H. Robertson, (Finlay, Robertson, and Co., of Liverpool) has joined the board of directors of the London and Lancashire Fire Insurance Company in Liverpool.

The London and Glasgow Engineering and Iron Shipbuilding Company report for the year ended June 30 that the balance at credit of profit and loss account (including a balance brought forward from previous account) amounted to 9878 1/2, after providing for a further loss of 517, under the estate of Malcolmson Brothers, Portlaur, Ireland; out of which the directors recommend a dividend at the rate of 6 per cent. per annum, or 1 1/2s. per share, which will absorb 7174 1/2, leaving 2704 1/2 to be carried to next year's account.

With this week's Journal a SUPPLEMENTAL SHEET is given, which contains: Original Correspondence; Rock Boring Machinery—No VII. (J. Darlington); Stamping; Colliery Managers' Association; the Teocoma Mine; the San Juan Silver Mines (W. Weston); Frontino and Bolivia; the Frontino (Antioquia) Company; New Quebrada Company (W. W. Bird); the Hultafall (Sweden) Mining Company (R. Oxland, W. H. Bumps); Mining in New South Wales (R. D. Adams); St. John del Rey Company; Limited Liability; the Functions of Mine Inspectors; the Manganese Ore District; Successful Mines and Mine Captains; the Lead Mining Interests (R. Tredinnick); Cambrian Mines (H. Boundy); Morfa-du-Mines; Wheal Grenville (T. Tiedler); Bedford United Mines—Limited Liability (J. Wedgwood); Treleigh Wood Mine; the Mines of Llanrwst District (J. Roberts); Tyn-y-Fron Mine (A. Francis); North Devon Mining—The Kit Hail Tunnel—Soft Steel and Ingot Iron; The Richmond Consolidated Mining Company—Foreign Mining and Metallurgy—Foreign Mines—Registration of New Companies—Patent Matters—Meetings of East Pool, West Wheel Seton, Killbreth, Wheel Agar, and other companies.

LEADHILLS.—We understand that all the directors and the engineers have visited these extensive mines during the week. The annual meeting is fixed for the 27th inst.

WEST PATELEY (Lead).—The manager, Mr. David Williams, M.E., writes:—"We have one of the finest lodes in No. 2 shaft I have ever seen at the same depth in the district." This shaft is being struck with a full pare of men, and will be down to the 20 the early part of next month, when levels will be driven on its course both east and west, laying open large reserves of lead ore, available for market. The other points of operation are progressing favourably.

LLANRWST.—Llanrwst will now speak for itself. The directors and several large shareholders from London will be on the mine at 12 o'clock on Saturday next, the 22nd inst., and will be glad to meet any shareholders who would like to be present on that occa-

sion. A parcel of 50 tons of lead is dressed ready for the market, and will be immediately sold; and there are also about 20 tons of lead dressed towards the next, which will be a larger parcel, and the sales will be continued.

WHEAL GRENVILLE.—As the proceedings of the committee have been recently questioned in connection with the new work, although sanctioned by two general meetings, they feel that the proper course for them to adopt is to hold the next meeting on the mine on Friday, September 21, thus giving the shareholders the opportunity of seeing and judging for themselves. The mine is situated about one mile from the Camborne Station on the West Cornwall Railway.

MINING IN QUEENSLAND.—Just as we were going to press we received a letter from our correspondent at Brisbane (June 30), in which he says:—"Our tin fields are rapidly and steadily developing, and their permanency is now proved beyond doubt, and the low prices now ruling have not so far affected supply. The Chinamen are going on the fields in thousands, and they will be able to produce stream tin at half what it costs with British labour. The letter will be published in next week's Journal."

FLAGSTAFF.—It is understood that a cablegram has been received, to the effect that in the last month's working 870 tons of ore were mined, netting the company \$15,000; that the new tramway from the mine to the railway is completed; and that the saving in freight will be 10s. per ton. The ore is improving, and everything going on satisfactorily.

TECOMA.—The work at this mine, which has been standing idle for so long past, has been recently re-commenced, under the sole control of the debenture-holders, and a sample lot of 10 tons of ore has been shipped to Salt Lake, and realised \$350. The Salt Lake agent writes very hopefully of the prospects.

Professor JOHN MORRIS, who for more than twenty years has held the chair of geology and mineralogy at University College, has resigned his appointment. Two gentlemen have announced themselves as candidates for the vacant chair—the Rev. T. G. Bonney, Fellow of St. John's College, Cambridge, and Professor H. G. Seeley, of King's College, who was for many years associated at Cambridge with the late Professor Sedgwick.

ZINC ORES.

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STRONGLY RECOMMENDED at present price the HULTAFALL LEAD AND BLENDE MINING COMPANY. Copy of a private report will be sent on application, and every information given.

The proximity of Mr. Beard's office to the Stock Exchange enables him to transact business in Consols, Foreign Stocks, Rails, and other Securities promptly, and the prices of any Stocks or Shares will be forwarded by wire, if desired.

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Orders or Telegrams for the Sale or Purchase, for cash or account, promptly executed on receipt.

SPECIAL BUSINESS in the subjoined MINE SHARES.—Full information and data as to the present and future prospects confidentially given to investors:—

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20 Argente, £2 1/2.	15 Goredick & Merilyn.	25 Perkins Beach, 20s.
10 Aberdunant, £2 1/2.	20 Glenroy, £3.	60 Port Phillip, 9s. 6d.
10 Alltair, £2 1/2.	10 Grogwinston, £3.	25 Rockhope, 18s.
30 Almada, 5s.	10 Hultafall, £5 1/2, 3s.	10 Red Rock, £1 1/2.
15 Bamfylde, £s. 3d.	5 Herodfoot, £3.	10 Richmond, £4 1/2, 3s.
60 Bodidris, £1 2s. 6d.	25 Last Chance, £1.	5 Roman Grav., £9 12s 6
60 Combartin, £1.	25 Llanrwst, £1.	20 Tolima, £1.
20 Condes of Chili, £3 1 1/2	10 Leadhills, £5 15s.	10 Tankerville, £2 1/2.
15 Colorado, £1 17s. 6d.	30 Nth. Laxey, 15s. 9d.	25 Van Consols, 11s.
30 Cakemore, £2.	20 Marke Valley, 17s. 6d.	5 W. Craven Moor, £10
25 Chicago, £3 2s. 6d.	50 Malabar, 5s.	15 W. Wye Val., £2 1/2.
15 Devon Consols, £4.	25 Mtn. Gordou, £2.	10 Wye Valley, £2 1/2.
10 Derwent, £2 5s.	10 Penant, £5.	2 Wheal Bassett, £3 2s 6
10 Eberhardt, £3 7s. 6d.	30 Pestarena, 4s.	20 W. Goginan, 11s. 6d.
30 East Caradon, 7s.	40 Prince of Wales, £1.	25 Kapanaga, £1 3s.
75 Exchequer, 5s. 3d.	30 Pandora, 10s.	50 W. Tankerville, 10s
20 Frontino, £2 17s. 6d.	20 Pateley Bridge, £2 2 1/2	50 W. Godolphin, £2.
20 Flagstaff, £2 11s. 3d.	60 Parys Mount, 8s. 6d.	100 Yorke Peninsula, 5s

GREAT HOLWAY—SPECIALLY RECOMMENDED.
Shares bought and sold at net prices. Telegrams promptly attended to.

VAN LEAD MINE.—Particulars of this very valuable Mine will be found in the SIXTH EDITION of Mr. MURCHISON's work on BRITISH LEAD MINES, published THIS DAY, with Maps, &c., price 2s. 6d. The Prefaces to the Six Editions price 1s.

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TANKERVILLE.	ROCKHOPE.
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LEADHILLS.	PANDORA.
DERWENT.	

Full particulars of the above and other valuable LEAD MINES will be found in the SIXTH EDITION of Mr. MURCHISON's work on BRITISH LEAD MINES, published THIS DAY, with Maps, &c., price 2s. 6d. The Prefaces to the Six Editions price 1s.

8, AUSTINFRIARS, LONDON.

"Contains a good deal of information that may be useful at present. Mr. Murchison's theory is briefly that on the average British Lead Mines have less of the lottery element in them than any others, and the figures he gives seem to support that view; at all events, those interested in this industry will find his facts and observations worth reading."—*Times*.

"Calculated to be a great benefit to investors."—*Mining Journal*.

"We have great pleasure in recommending his treatise."—*Morning Post*.

"We invite capitalists to look into this means of investment."—*Money Mark Review*.

Notices to Correspondents.

** Inconvenience having arisen in consequence of several of the Numbers of the past year being out of print, we recommend that the Journal should be kept on receipt; it then forms an accumulating useful work of reference.

Received,—"W. T. G." (San Francisco)—"C. H. W." (Chile): Postage 10s. 6d.—"Shareholder" (Van Consoles)—"J. M."—"R. N. W." It has not been received—"P. W."—"T. P. M." (Colliery Managers' Association): The letter has been forwarded; as also that from "J. R."—"Constant Reader" (Carlisle)—"Enigma" (Brighton)—"Shareholder" (Penrith) should write to Mr. Ashmead, 64, Cornhill—"J. W. C."—"Shareholder" (Wheat Grenville) should send a copy of his letter to the secretary—"W. G." (Brighton)—The letter from Mr. F. D. Mathews shall appear next week—"Resident" (Brisbane).

THE SUPPLEMENTARY SHEET.—We have received occasional complaints, and of late a good many, that the Journal is delivered by country booksellers without the Supplement. Subscribers would oblige us by demanding that the paper should be handed to them complete, as every Journal is accompanied by the Supplement when it leaves our office, and the fault of omission must rest with the country bookseller or their London agent.

THE MINING JOURNAL,

Railway and Commercial Gazette.

LONDON, SEPTEMBER 15, 1877.

THE COLLIERY MANAGERS' ASSOCIATION.

The suggestion we threw out some time since as to the formation of an Association of Certificated Colliery Managers, embracing the entire body in England and Wales, we are pleased to find has met with a hearty reception already from many quarters. Of this we are assured from the letters we have received, as well as from the reports forwarded to us from several mining districts by our correspondents. In the West Riding of Yorkshire, in particular, we are informed that the proposition has been heartily welcomed by many of the colliery managers in that important centre of the coal trade, so that what is now looked forward to is the initiative being taken by some persons belonging to the body, so that communications can at once be opened up with the various colliery districts in the country. Until that is done it appears useless and premature to discuss the formation of the executive, and how the association is to be conducted. Already, however, some of our correspondents have been at the trouble of laying down the main principles on which the association should be based, and the class of persons that should be called upon to be the managers of it. This we know has already done harm, for the great body of colliery managers in the United Kingdom are not likely to be governed by "none but highly scientific and widely reputed men." But we must say that when introducing the subject to the colliery managers our views with respect to the establishing of an association were not that it should be principally a medium for the reading of papers on mining subjects, and so disseminating useful and practical information among such as might be expected to have a less scientific knowledge with respect to mining matters than others. No doubt such a course of reading is all very well in its way, but there are other things which act prejudicially towards the colliery manager in the carrying out of his responsible duties. We quite admit that the success of the Iron and Steel Institute was in a great measure due to the admitted scientific knowledge of the Council. But an Association of Colliery Managers would be a very different thing to such an Institute, which is of a purely scientific and literary character, as the members, for instance, are not subjected in the performance of their ordinary duties to any penal or other laws whatever, whilst the colliery managers have been specially legislated for in the carrying out of their daily work at coal mines. They are liable to fine, imprisonment, deprivation of their certificates, and entire loss of employment in the profession by which they hitherto obtained their livelihood. Such is the result of the Act of 1873, which was brought forward in the interests of the working miners, whose representatives watched the Bill through its every stage, being on the spot ready to suggest to Members of Parliament who were favourable to their views points that were in their favour, and those that told against them. The consequence was that the clauses in the Bill relating to colliery managers were not only stringent but more severe than are to be found in the Statute Book with respect to any other body having numbers of workmen under their control. The reason for this was the want of union—of an association—on the part of the colliery managers, none of whom appear to have been at the trouble of examining the Bill in which they were so deeply interested, or taken steps to be represented in London, to act as the miners did. If they had done so they would have found Members of Parliament who would have supported them in opposition to *ex parte* legislation, and to the provisions of a measure which pressed unfairly on one class. In proof of this we need merely look at the clauses with respect to managers. Thus while it takes ten persons, including an Inspector of Mines, three persons employed in and about a mine, and three mining engineers or managers to grant a certificate of competency, it only requires one person—say a County Court Judge—to cancel or suspend the same. From his decision there does not appear to be any appeal to a higher Court, although for other ordinary offences with respect to all persons connected in any way with mines, where the penalty inflicted by a Court of Summary Jurisdiction exceeds half the maximum sum, or where imprisonment is adjudged, an appeal to Quarter Sessions is allowed. Such anomalies as these surely are of importance to our colliery managers, and might be most beneficially taken up by an association, even in preference at first to purely scientific subjects. By combined action there is very little doubt but a Certificated Colliery Managers' Association would be able to have the present Act greatly modified in some of the clauses, and in future legislation be in a position to see that the interests of the members were not overlooked.

Looking at the subject in every phase that presents itself, we feel assured that there is no chance for the establishing of a Managers' Association having for its main object the reading of scientific papers, which, in our opinion, should be a subsidiary one. The project as sketched out by us in the original article is the one that has most commended itself to the colliery managers. It includes the providing of educational establishments for the children of members where they could be well grounded in a scientific and practical education at a moderate cost, so that they might ably fulfil the duties as the heads of collieries in years to come. Then there is the making provision for members in their old age who have not been able from a variety of circumstances to save sufficient to keep them, as well as for those who by accident may be permanently disabled. Also in case of prosecutions, at times very costly to an individual, the Association would be able to undertake the defence of its members. These are some of the leading features which we feel assured if brought forward as the basis of a Colliery Managers' Association would attract a majority of our managers to it, whilst a purely scientific association would meet with little or no support, seeing that there are a good many such already in existence. It is scarcely worth while at present going into the question of the executive of an association not yet started, but the members should be good practical men of business, taken from different districts, to be assisted by small local committees. Meetings of the executive might be held yearly or half-yearly, or there might be a general gathering. At all events, local committees might send delegates to assist in the general work of the Congress. By some such system we might have in connection with our colliery managers one of the most powerful associated bodies in the kingdom, not only pecuniarily and numerically, but in science and ability as well, and calculated to do a great deal of good. Such an association would not only lead to the members having a more independent position than at present by the protection it could afford them, but would cause them to be much better respected than they are in many localities. One thing, however, must be guarded against at the outset—a want of unanimity on the part of those who take the matter in hand, whilst it is to be hoped that those who do not intend to belong

to the proposed association will be satisfied to leave the work in other hands, without needless criticism. Suggestions of a practical character, with the object of assisting the promoters, we have no doubt will be gladly received. We, therefore, hope before long to be able to announce that the attempt to form a Certificated Colliery Managers' Association has been a marked success.

OUR RAILWAY IRON ABROAD.

As our readers are aware, there has been some improvement recently in the external demand for our railway iron, the exports to various foreign countries and British colonies in the first eight months of this year having amounted to 323,628 tons, as compared with 274,233 tons in the corresponding period of 1876, and 391,936 tons in the corresponding period of 1875. The exports of August presented, however, a certain languor, the shipments of that month having been 42,773 tons, as compared with 50,906 tons in August, 1876, and 61,078 tons in August, 1875. A sharp decline in the exports of our railway material to Russia—from 20,092 tons in August, 1875, to 14,052 tons in August, 1876, and 8086 tons in August, 1877—accounts for the unsatisfactory contraction in the general shipments of August. Railway enterprise in Russia is, of course, very greatly dependent upon the Russian Government; and as the Russian Government has, unfortunately, its hands full just now with other matters, the work of railway development in the vast dominions of the Czar has sustained a certain check. In the American demand for our rails we can, unfortunately, discover no improvement. The Americans appear to be absorbing our rails in even more infinitesimal quantities than ever. In August, 1875, for instance, we only sent the United States 152 tons of our rails. This was bad enough, but in August, 1876, the exports in the same direction declined to the still scantier total of 29 tons, whilst in August, 1877, they receded further to 11 tons. The recent terrible labour riots, the crude ideas prevailing in the United States upon the question of capital and labour, and the want of good faith on the part of the Governments of several more or less important States, are all calculated to weaken credit in the United States; and, of course, anything which weakens credit weakens also the demand for rails, although the great stumbling block in the paths of our ironmasters when they endeavour to do business across the Atlantic is the remarkable development of American metallurgical industry during the last ten years.

The South American demand for our rails continues to reflect the effects of the weakening of American credit by reason of the defaults of Peru, Uruguay, Bolivia, Paraguay, Costa Rica, and one or two other South American communities. Brazil still maintains her credit and her good name, and we are still sending accordingly substantial quantities of rails to the great South American empire. But to other parts of South America our railway iron exports have nearly ceased. This will be seen on an examination of our shipments of iron to South American countries during the first eight months of the last three years:—

	1875.	1876.	1877.
Brazil.....Tons	6,418	11,484	17,698
Peru.....	11,759	1,789	1,280
Chili.....	13,924	2,416	833
Total.....	32,233	15,999	19,721

Chili, it should be observed, has not yet defaulted upon her bonds, but Chili is pursuing a policy of extreme caution in the matter of railway development; and, accordingly, our shipments of railway iron to that Republic present scarcely a vestige of the importance which they formerly possessed. The most hopeful feature in our external railway iron trade just now is the steady demand which is noticeable upon Indian and Australian account. Indian railways are proving more and more financially successful, and the Indian Government appreciates the value of railway communication more and more, and is beginning to show itself in earnest in regard to the construction of State lines. As for the Australian colonies, they appear just now to be the most prosperous quarter of the world; and, as population accumulates at the Antipodes, it is not surprising that the work of Antipodean railway construction should be prosecuted with vigour.

COLLIERS, AND THEIR WAGES.

In several districts at the present time there is some excitement with respect to a proposal made by the colliery owners that their men shall submit to a small reduction of wages. This is more particularly the case in South Yorkshire and North Derbyshire. For some months past masters have been waiting patiently in expectation that there would be a marked change for the better in the iron trade, which is the only thing that could give an appreciable impetus to the consumption of coal, but this has not taken place, and appears almost as far off as ever. Such being the case, it is certainly only what might be expected that the proprietors of mines, who have kept them going without any benefit to themselves in the shape of profit, but entirely to the advantage of the men, should ask the latter to share with them to a small extent the burden which they had so long borne by keeping their pits going. But even the concession of 5 per cent. was refused; had it been conceded the wages would then have been exactly what they were in 1871, before the price of coal and the advance of miners' wages took place, consequent on the fears of the public that coal was going to be scarce. The men are, consequently, now better off by 5 per cent. than they were then, whilst the masters are just the reverse, for since 1871 the Mines Regulation Act has come into operation, which is equal to a tax of from 1s. to 1s. 6d. for every ton of coal raised. The price of coal, too, at the present time is as low now as it was in the year named, whilst all the requirements for the working of mines, as well as the carriage rate, are considerably higher. But we are told by the leaders of the miners that trade has greatly improved, and that prices of coal are such as to pay a fair profit to our colliery owners. So far from this being the case, we have been told by some very large owners that it is as much as they can do to prevent an actual loss on the working, and that coal is now lower than it was last year. This is shown in the Board of Trade returns, for with a deficit in our exports during the present year to the end of August, as compared with the same period of last year, we find that the average value was fully 1s. per ton 1s. in 1877 than for the same months of 1876. We have another illustration of this in the report of the Thorp's Gawber Hall Colliery Company, at the meeting held on Tuesday last. In that report it was stated that the average price of the coal raised at the pits for the half-year ending June, 1876, was 7s. 3d. per ton, for the following or Christmas half-year 6s. 5d., and for the half year ending June last it was within a fraction of 5s. 10d. per ton, showing a difference in favour of the summer half-year of 1875 against that of 1877 of 1s. 4d. per ton, in itself a very large profit indeed. At the meeting alluded to the gentleman who occupied the chair said he did not believe in a reduction of wages, as they were at present as low as in 1871. But this we have shown is not the case, for the men admit that they are better off by at least 5 per cent. Deploping the dull state of trade and the low prices which prevailed, the Chairman further said he thought the remedy lay in a combination of men and masters to keep up prices. Now, there is no greater fallacy than to suppose that any combination could be formed by which the price of coal could be kept up beyond a certain point, or to suppose that all the colliery owners would agree to such a suicidal policy.

Our exports of coal are now about one-tenth of all that is raised, and supposing it was agreed that only half the usual quantity was sent out of the country, what would be the result? Why, we should be doing what the German colliery-owners would very much like, and we should lose a very large portion of our present continental trade, which is only now held owing to our proprietors of mines selling very low, without thinking of profit, in the expectation of a brighter future. Limited production for the purpose of increasing the price would not answer or last a fortnight if attempted, and there is certainly no ground whatever why the public at large should be taxed for the coal they consume for the special benefit of one class, no more than the butcher, miller, baker, or tailor should combine for a similar purpose. But the fact is, high prices have done more harm to the coal trade than anything else, and the depression

which has prevailed for some time is caused by the many new collieries opened out commencing from the mania, and also for the very heavy sums given for going concerns, which, with the present instances where more than 200,000l. have been paid for a colliery which shortly before was purchased for less than 40,000l., and which ever we may sympathise with the duped, we certainly cannot but think the whole country should be called up to reimburse themselves for their folly. But were production limited the result would be a limitation of consumption, as has been the case more particularly in London since 1872. Before then it was laid down that the consumption of coal increased *pari passu* with that of population.

Turning back, then, to the wages question, and the present position of our colliery-owners we have shown that the price of coal is now the same as it was in 1871, whilst wages are 5 per cent. higher, but then, as before, there is the loss by the Mines Regulation Act, and if we look to the London trade we find that the railway rate from South Yorkshire to the Metropolis was never higher in 1871 than 6s. 7d. per ton, whilst now it is 8s. 3d. This is a serious item the colliery owner has to bear with; it is at least 2s. per ton more than is charged for coal taken by screw steamer to the Tyne to the Thames.

We think we have shown that the present position of our colliery owners is far from being so good as it was in 1871, and we, therefore, consider it the duty of the workmen to relieve them in every way they can for their mutual benefit in the future.

CORNISH MINES, AND CORNISH MINERS.

During the past few months the Government Inspector of the Liferous Mines for Cornwall and adjoining districts—Dr. CLARE NEVE FOSTER—has contributed to various scientific societies a series of papers of great value and utility to the miners, and as these have now been printed in pamphlet form, probable that they will be still more generally brought to the notice of those for whom they are intended. First, there are the "Suggestions for the Formation of a Miners' Permanent Club and the Society for Cornwall and Devon," by Dr. FOSTER and Mr. W. PIKE, and although the paper was fully referred to at the time it was read before the Mining Institute of Cornwall, it may be mentioned that the suggestions made are so important that should not be permitted to pass by unnoticed. The defects of the system at present prevailing in Cornwall and Devon were pointed out—there is no provision for widows, orphans, or dependants of persons killed by accident; a man disabled by accident loses his "hurt pay" if the mine wherein he met with the accident ceases to be worked; there is no provision for sickness; and when the mine stops the adventurers put the balance of the money (which is as much the men's property as any other part of their hard-earned wages) into their own pockets. The Inspector shows that there are 15,000 males above 16 employed in Cornwall and Devon mines, and that these subscribe about 1s. per annum as club money, and Dr. FOSTER and Mr. PIKE have estimated that by increasing the levy on the men from 6d. per month to 9d. per man per month, there could be provided, pension to widows and orphans, pension to members disabled by accident, and, possibly, pension to aged and infirm members. There is no project which we would more readily vocate than this, provided anything like an active committee formed, and there can be no doubt that great advantage would be to the mining community.

The description of a deposit of tin at the Park of Mines, contributed by Dr. FOSTER to the Miners' Association of Cornwall and Devon, contains some very interesting information. He states that the riches of the Park of Mines have been derived from appear to be lateral offshoots of the north and south veins, the proximity of the little strings or quartz veins traversing the killas lenticular masses of tinstone occur interposed between planes of bedding of the killas. Deposits of this kind when nearly horizontal would be called in Cornwall floors, and they respond in some measure to the flats of the North of England; the present instance, however, as the dip is generally from 70° to 75°, the tinny layers are called by some people east and west. But this term is not very appropriate, as the little lenticular masses of tinstone are generally very short, and when they cease all trace of a fissure disappears. The diagrams illustrating the paper add to the value of the description.

Reference may next be made to Dr. FOSTER's "Remarks on Tin Lodes in the St. Agnes District," contributed to the Transactions of the Royal Geographical Society of Cornwall. These may be regarded as a continuation of those of the late Mr. W. HENWOOD, and are of great value to practical men. He observes that can be seen at low tide on the western side of Cligga promontory is one of the most remarkable in the county, and, of course, attracted the attention of geologists many years ago, and has continued to do so ever since. Dr. FOSTER has been in calling it one of the finest in the county of Cornwall, and he doubts if any country in the world can exhibit a section full of interest to the student of tin lodes. He supposes the lode to have been once in a soft state, and whilst in that condition have broken through the killas. As it cooled it contracted, and a series of small fissures; these formed channels for vapour solutions proceeding from below, which not only deposited minerals—quartz, cassiterite, &c.—in the open cracks, but also composed the boundary walls. The granite near the fissure totally changed, and converted into greisen, whilst a little farther from them the felspar was simply decomposed, and altered to kaolin. We thus get greisen walls to each vein, and decomposed granite between the greisen walls of two adjacent veins. He believes that the phenomena observed at Cligga have not previously been explained in this manner.

The two remaining pamphlets which will be mentioned in brief papers read before the Mineralogical Society—the one, "Some New Mineral Localities in Cornwall and Devon," and the other, "A Defence of Turner's Method of Detecting Boracic Acid." The former he records the finding of apatite at Wheal Kitty (St. Agnes), bismuthine at Penhalls, chalcocite at Bosworgey Mine, in St. Agnes, and fluor-spar, leucopyrite, mispickel, molybdenite, scheelite, tourmaline in new localities. In connection with the latter he observes that the green peach of the Cornish tin mines is undoubtedly chlorite; but the so-called blue peach which is a constituent of the tin lodes of such mines as Dolcoath, Cuck, Carn Brea, West Bassel, Phoenix, and many others, is a bluish grey variety of tourmaline. He finds already that a piece of blue peach he has tested by Turner's method gives the presence of boron. Dr. Foster does not agree with Mr. Chapman that with borate of soda Turner's test gives unsatisfactory results, nor that most of the borates, save sodic borate and silicates, colour the flame as well as with Turner's flux. He can be no question that except with regard to the primary or every written description of a colour, whether of a flame or of a mineral, is most unreliable, if not altogether valueless, and hence it is of little importance to blowpipe tests, except as affording a rough indication as to the subsequent processes which it is most desirable to apply to obtain the desired results. Although blowpipe tests, doubtless, useful in certain cases, it appears to be of little value of which has been much over estimated in the attempt to use for which it was not originally intended.

MINERS' ASSOCIATION OF CORNWALL AND DEVON.—It has been announced that the Council have this year awarded the Journal Prizes for progress in the study of the Principles of Geology to Mr. William Thomas of the Camborne Class; Inorganic Chemistry to Mr. J. W. Avery of the Royal Cornwall Geological Museum; and Mineralogy to Mr. A. K. Barnett, F.G.S.; and Mineralogy to Mr. J. Davies of the St. Agnes Class; and Mineralogy to Mr. Beringer of the Redruth Class. We are requested to add that Beringer has also been fortunate enough to obtain one of the

At a meeting of the Severn and Wye Railway and Canal Company

the directors were authorised to borrow, on mortgage debentures, at interest not above 5 per cent. per annum, a sum not exceeding 60,000*l*. Some 40,000*l*. of this is to supply the place of money borrowed at a larger rate of interest. A saving will thus be effected.

The Newport Harbour Commission have decided on purchasing for 2200*l*. five sixths of the Gridiron property a place now erected by them and used for the purpose of repairing vessels. The principal portion of the property, on which the Commissioners have expended a large amount of money, is freehold. The purchase is undoubtedly a wise one.

A collier named Thomas Bale, working at the Bedwellty Pits, has invented a boring machine which can be worked by hydraulic power. The invention is certainly original, and is to be patented as early as possible. The hydraulic power is to be supplied by Mr. Fudgeon, Fenchurch-street, London. The inventor lacks capital, but if the machine does its duty properly it will assuredly commend itself to the attention of many engaged in sinking, mining, and tunnelling operations.

THE TIN-PLATE TRADE.—A shareholder, writing to the South Wales Daily News, says:—A correspondent refers very prominently to the assertion made three years ago by Mr. William Lewis (Lewis Afan), that a box of IC coke tin-plates could be manufactured for 17*s*. The conclusion arrived at by your correspondent as to the cost at the present time of a box of tin-plates is in itself erroneous. The majority of makers know to their sorrow that it costs considerably more. Take the relative prices of materials, to say nothing of labour, in 1874 and 1875, and it will be seen how incorrect is the inference that, if IC coke tin-plates can now be manufactured at 17*s*. per box, they could have been made at the same price in 1874. Coke bars now worth 6*s*. 10*s*. per ton were worth three years ago 10*s*. per ton. Tin now worth 65*s*. per ton was then worth 92*s*. per ton. Coke now obtainable at 6*s*. per ton was then worth 10*s*. 6*d*. per ton. Castings required for renewals and repairs, now worth on an average 6*s*. per ton, could not be bought three years ago for less than 10*s*. per ton, and everything else required in the manufacture of tin-plates was proportionately dearer.

TRADE OF THE TYNE AND WEAR.

Sept. 12.—The Coal Trade has been very quiet during the past week, and shipments not so large. The gas coal trade continues good, as contracts have been entered into by the great London companies and others for supplies for the winter, but for other kinds of coal the demand does not come up to the supply. This, of course, causes sales to be pushed at, in many cases, prices which leave no profit. The demand for coke continues fair, and deliveries both inland and into shipping are about the average. The dispute at the Bear Park Colliery, near Durham, has been adjusted, the men having returned to their houses and started work. All the matters in dispute are to be referred to a committee. At Ryhope all efforts to arrive at a settlement have proved abortive, and 29 of the men were again brought before the magistrates at Sunderland on Saturday; they were each fined 20*s*., the charge being having absented themselves from the work without having given 14 days' notice. The men now say that the obstacle which prevents an agreement is the refusal of the masters to receive the President of the Miners' Lodge in deputation. Now this President, we understand, is the man who was found guilty of assault and intimidation, and sent to prison, and afterwards an order from the magistrates discharged him from the post of check weighman at the colliery; the masters, therefore, cannot possibly receive him on a deputation, as he has no connection whatever with the works. There is, therefore, a deadlock here, and we may learn from this case that the men can inflict very serious injury on the masters, and in the present state of the law there appears to be little chance of any remedy. The cost of keeping such a work as Ryhope open is, of course, enormous, and the loss will amount to several thousand pounds. The Gosforth Colliery, one of the oldest works on the Tyne, well known as producing a first class house coal, is to be stopped, on account of the state of the trade. All the hands connected with the place, a considerable number, at surface and underground, have received notice in the usual way.

The meeting of the Iron and Steel Institute in Newcastle promises to be one of great interest. A large number of members are expected to attend. Original papers of special local interest are to be read.—1. "On the Geological Features of the Great Northern Coal Field," by Mr. G. C. Greenwell. This eminent mining engineer is a native of Tyneside, and he has lately taken up his residence at Tynemouth, where he will enjoy comparative quiet after a life of unceasing activity.—2. "On the Manufacture of Coke in Relation to the Iron Trade of the North of England," by Mr. A. L. Stevenson. This gentleman is engaged in the management of extensive collieries and coke works in Durham, so that he is well qualified to treat on this important subject. He published a practical work on mine engineering more than 20 years ago, and this is now one of the best standard works on the subject.—3. "On the Separation of Carbon, &c., in the Refining and Puddling Furnace, and in the Bessemer Converter," by Mr. I. L. Bell, M.P. Mr. Bell is also a local man, who is well known. He has been the inventor of many important improvements in the manufacture of iron, steel, and chemicals. All the most important works on the Tyne will be open for the inspection of the members. Amongst them we may mention the Consett Works, the immense works of Sir W. Armstrong and Co., at Elswick; Stephenson's and Hawthorn's Works, &c., and they will also have an opportunity of seeing the working of the swing bridge on the Tyne, the largest of the kind in the world.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

Sept. 13.—Mining operations in Derbyshire have undergone no change of importance since my last notice. A very fair business has been done in house coal from several of the leading collieries, although less has been done to London from Clay Cross than usual, whilst an increased tonnage has been sent from Langley Mill, Staveley, and Tibshelf. This is only what might be expected for the time of the year, as consumers will now be inclined to stock their cellars for winter. There has been some notice given at some of the collieries that the men will be expected to accept a reduction of wages to the extent of 5 per cent., which would be a return to the rates of 1871. The men, however, are not inclined to accept the proposal, and meetings have been held on the subject at Eckington and other places, at which the officials of the Miners' Association have been present. A steady business has been doing in pig and manufactured iron, considering the general state of the trade of the kingdom.

In Sheffield several branches are now more fully employed than they have been, and there is likely to be a busy season for Bessemer rails. American advisers are more cheering than for a long time past, the result being that some of the leading cutlery firms have been induced to give orders out more freely. Very little work was done at many of the works yesterday or at the collieries in South Yorkshire, owing to the St. Leger being run for at the racing carnival at Doncaster. The day is almost a general holiday, and thousands, whether in work or not, generally manage to reach the moor. Owing to the passenger requirements of the Great Northern and Manchester and Sheffield Railway Companies during the race week but little coal is taken away, owing to the want of locomotive power, so that the stoppage of the collieries for two or three days is no inconvenience. There appears to have been an improvement generally in the coal trade, as will be seen from the following statement showing in detail the coal traffic by railway to London from Yorkshire and Derbyshire. The quantity of coal passing over the various lines of railway to London shows a marked increase during August over the two previous months, an increase which it may be said has been shared in by all the companies. From this it may be assumed that large consumers are now purchasing for winter, and this is certainly what they ought to do, for coal is not likely to be cheaper than it now is during the present year. At the same time there is not much likelihood of it materially advancing, seeing that production is rapidly increasing in almost every district in the kingdom, and that alone will keep down prices. So far, the disputes in the North have been favourable to the inland colliery owners, who have sent 129,220 tons more this year than they did for the same period of 1875, whilst there was a decrease by sea during the last eight months of 115,406 tons in comparison with the corresponding month

of last year. Prices of both sea-borne and inland coal have advanced since the early part of July, so that best Silkstones are now from 23*s*. to 24*s*. per ton delivered, whilst thick coal realises from 19*s*. to 22*s*. per ton. But it may be said that a great deal of coal is now being sold in London under fictitious names, for we have inland Wallend sent from the Midland field, and Silkstones that must have been raised some 380 yards above where that well-known seam is generally found, and of course is sold considerably lower than the genuine article. However, the London trade by railway during last month has been most satisfactory so far as sales are concerned, but although merchants have been able to obtain an advance, colliery owners have not been able to get the same, and except in some instances where about 6*d*. per ton less increase has been obtained, pit prices generally remain without any quotable change worth recording. Last month the increase over the quantity taken by railway in July was no less than 75,918 tons, equal to 16 per cent. The following figures show the tonnage carried by the various lines during the last three months:—

	June—Tons.	July—Tons.	August—Tons.
Midland	119,452	115,076	122,179
London and North-Western	97,079	96,791	102,230
Great Northern	56,994	56,803	78,819
Great Western	96,999	62,333	84,195
Great Eastern	42,051	44,028	54,586
Other lines	5,245	2,918	9,478

Total 387,820 377,947 433,865
It will be seen that the Midland keeps steadily ahead of the other companies, but last month it carried 5500 tons less from Clay Cross than in July, but there was an increase from Tibshelf of about 2500 tons, as well as from Langley Mill, Staveley, and Riddings, so that of a dozen collieries in Derbyshire that carried 85,700 tons in July were credited with 91,000 tons in August. The Midland also took an average tonnage from the Oaks, Darfield Main, Lund Hill, and Monk Bretton Collieries in the Barnsley district, and nearly 1000 tons from New Sharlstone and St. John's, in West Yorkshire. The London and North-Western goes through several coal fields, and takes extensively from South Wales, Lancashire, and Staffordshire, and of late has managed to secure some of the South Yorkshire traffic, the wagons being put on at Guide Bridge by the Manchester and Sheffield. There has been a marked improvement in the tonnage of coal sent over the Great Northern last month, and certainly more than was expected, but, singular to say, the greatest increase in South Yorkshire over that line has been from the Mitchell's Main colliery only recently opened out, and still in the course of development. Lund Hill also shows improvement, as does Kilnhurst and Darfield. From the principal pits raising the Barnsley there was sent in August 19,800 tons, against 14,900 tons. Of Silkstones more was sent than for several months past, Birley taking the lead, the pits sending away to London alone upwards of 2000 tons a week. Last month the Great Western from eight collieries conveyed 17,000 tons, against 14,000 tons in July. In West Yorkshire trade kept up well, particularly from Sharlstone and St. John's. From four collieries in that district the quantity sent to London was in July 5000 tons, and in August 9600 tons, or nearly double. Several of the new collieries are increasing the output for the London market, and amongst the new may be mentioned the Hoyland Silkstone, one of the finest collieries in the West Riding, and which when fully opened out will be able to send 1500 tons of coal to bank daily. The Great Eastern has improved its position during the month, the coal being taken principally from Derbyshire and South Yorkshire. Taking the eight months of the present year it will be seen that so far as the traffic is concerned they contrast favourably with those of last year. The tonnage carried was as follows:—

	1875—Tons.	1876—Tons.
Midland	982,063	985,973
London and North-Western	701,082	836,881
Great Northern	626,757	554,019
Great Western	489,419	769,419
Great Eastern	416,955	594,977
London and South-Western	27,497	32,753
Other lines	15,184	14,568

Total 3,299,057 3,388,278
It will be seen that the Great Northern is still a long way behind, to the serious loss not only of the railway company, but to the colliery owners of South Yorkshire as well, and it is to be hoped that an effort will be made by the directors to give the latter a better opportunity of competing with those in other districts.

The dispute at the Dodworth Silkstone Colliery, near Barnsley, has not as yet been brought to a close. The arbitrators met at Manchester on Tuesday, but of course did not agree. The whole matter will now be decided by the referee, Mr. W. Jeffcock, mining engineer, of Sheffield.

The annual report of the Sheepbridge Coal and Iron Company, whose works are near Chesterfield, after alluding to the depression in the coal and iron industries, states that the result of the year's working had been a profit of 8804*l*. 14*s*. 11*d*., and there was a further sum of 1310*l*. 2*s*. 9*d*. remaining after the payment of the last dividend. The directors recommend that 10,000*l*. be transferred from the reserve fund to the profit and loss account, and that a further sum of 8311*l*. 5*s*. be divided amongst the shareholders, making a dividend of 5 per cent. on the year, and leaving 2998*l*. 17*s*. 9*d*. to be carried to the next account. The colliery at Newstead has been largely opened out during the year, and is now raising coal at the rate of 100,000 tons yearly, its quality being such that an easy sale is obtained, having regard to the existing depression. Mr. H. W. Gibson, of Stafford, has been appointed to fill the vacancy on the board caused by the death of the late Mr. W. Fowler, of Whittington Hall.

REPORT FROM THE FOREST OF DEAN.

Sept. 13.—At the recent gale dinner meeting at the Speech House Mr. T. F. Brown, the Crown Gaveler, urged the necessity of reducing the cost of production as to our staple industries, referring, of course, more especially to coal and iron. Of late years frequent reference has been made by the colliers at their meetings to discuss grievances to the waste which occurs at the pits through adopting wrong methods of carrying on the business, and making allowance for misconception and exaggeration, we feel convinced that there is a percentage of truth and fact in their allegations. And it strikes us that the reduction in the cost of carrying on the coal business must come from a careful revision of the methods of working the business, for we feel certain that wages cannot be further reduced without serious injury and suffering to the men. One source of loss to coal proprietors comes from the use of too high carts, so that the "tip" upon the bank for filling into the trucks to send off to the merchants is so great that it smashes up block coal into rubble and lime coal, thereby reducing its value from best prices to rubble and lime coal prices, which makes a difference of from 1*s*. 6*d*. to 4*s*. 6*d*. per ton. Now, if the carts were constructed as low as possible, so as just to clear the ground, and the banks so adjusted in construction that the shock would be minimum in tipping, we think that a great waste would be prevented, and a handsome addition to returns from capital invested effected. It is also a quality important where screens are used to secure low carts and gentle runs of the coal over the screens when tipped, or even more waste will result. We have seen carts of block coal tipped from high carts with great force, so as to shatter and break up valuable coal into rubble and aniliths coal; in fact, we consider the "stilt" fashion of building carts and a screens a most wasteful one. Now, if a penny saved is a penny gained, the same must apply to the shillings of waste on every ton of coal by the smashing system of high carts, high tips, and high screens.

By carefully considering the methods of getting the coal from the pit into the trucks for the merchants, we are fully persuaded that a great reduction in the cost of production may be effected; and, further, we are satisfied that if rock drills or other suitable machinery were used in pits to get the coal, instead of the pick, which necessarily does too much "chipping" to effect a dislodgment of the "black diamonds," a further reduction of cost would be effected. Then the same philosophical and economic principle should be applied to the entire operations of an establishment. Complaints have been made sometimes by colliers as to the waste occasioned by having too many under-strappers, or subordinate officials. Of course, where two men are paid to do one man's work, a saving could be effected by drafting one of them to some necessary department or work. Officials should not be too few; neither should money be wasted by an unnecessary number of them. Waste may also be occasioned by a reckless use of coal for night fires. We have heard of instances of collieries where from 3 tons to 5 tons of coal were burnt per night, which seemed to us a great needless waste of fuel. Let sufficient be used for lighting purposes, and no more; for sufficient for light would be sufficient for any other necessary purposes—as, for instance, an occasional warming of men's hands on cold winter nights. There are some of the ways or means by which Mr. Brown's suggestion of cutting down the cost of production may be effected; and we place them before all to whom it may concern for their consideration. The iron trade is still very dull, but a slight improvement is reported in the tin plate trade. The slight improvement in the coal trade

reported by us in our last communication has, we think, been fairly met, but we are anxious for more marked improvement. We are not aware of any recent change in prices. The general meeting appointed for the 15th at Mitchelldean Road line has been put off a few days, the chairman has not yet returned home, so that the works are still standing. We hope soon to report further progress.

IMPORTANT TO STEAM USERS.

Of all the difficulties that steam users have to deal with, country incrustation in the boiler is certainly the most serious, having proved the invariable cause of a great amount of loss of money, waste of fuel, and extra labour for repairs, as well as loss of time and of capital. To avoid this incrustation many positions have been brought before the public, principally America, but none have been fully successful as far as we are concerned. We have often wondered why some chemical firm in the kingdom had not tried to meet this evil, the remedying of which would be a saving of over 250,000*l*. to the manufacturers of which we are glad, therefore, to hear that the well-known firm of Messrs. Berger Spence and Co., of London, also of Manchester and Glasgow, have started their extensive works, where they are making composition to avoid scaling and incrustation, which the Globe Steam Boiler Powder.

We may say that after examination we have great faith in the efficacy of their ingredient, and for the benefit of our readers subjoin a few particulars that will show that Messrs. Berger Spence and Co. have discovered the right thing. As our readers are aware, and more especially those who use steam, all the in common use contain a large amount of imperceptible impurities, which, by the incessant working of the law of gravitation, cause of boilers precipitated, so forming an incrustation varying from 1 in. of deposit of absorbent coagulative matter on the surface of the boiler. This incrustation being a decided conductor prevents the free transmission of heat from the fire which now corrodes or burns away the iron of the boiler by of such incrustation intervening between the boiler. It was, therefore, necessary to find an ingredient which would cause a circulation of the water, sustaining in solution all the impurities which would otherwise form a deposit in the boiler. The ingredient is now found in Messrs. Berger Spence and Co.'s Steam Boiler Powder, which, from its solvent properties and mechanical action, prevents the subsidence of the sediment matters found in the water. This result being obtained, the loss of the boiler is not augmented, and, therefore, the general steam not being interfered with, it is possible to effect a saving of from 16 to 25 per cent. in fuel alone. Further, the iron and consequently the boiler, necessitates no cleansing. As the composition (20*s*. per ton) is very low indeed, considering the advantages which may be derived from its use. It is sufficient to solve 1 lb. more or less, according to the degree of impurity, water, per 4-horse power in the feed-water daily.

We may add that the name of Messrs. Berger Spence and Co. has such an influence in chemical matters as to enable them to sell in less than three weeks large and important trial orders from mineral manufacturers, paper makers, ironfounders, millers, refiners, &c.; in short, from nearly every class of steam user only in this country, but also on the Continent, and even in America. We hear also that one of the largest railway companies in the world is to give it a trial; and Messrs. Berger Spence and Co. are confident that they will sell 200 tons before the end of the year and we heartily wish them the success they fully deserve for having tried and grasped with one of the most serious drawbacks steam users have had to contend with.

ARTIFICIAL STONE.—The object of the invention of Mr. W. of Eastbourne, is to produce a composition or material suitable for flooring and other bricks and for paving and roofing. For this purpose he employs Portland cement, ground glass, fine shingle or coarse sand, and a pigment or colouring matter or about the following proportions:—1 of cement, 2 of shingle or coarse sand, 2 of pigment or colouring matter, and 2 of shingle or sand. To this he adds the required pigment, he then adds water sufficient to make it into a thin paste. The moulds are then filled therewith, and in the course of a few days the material becomes set, and in about a day the moulded articles are fit for use. The manufacture may be carried on in places of weather and seasons, and the articles produced are not injured by weather or frost. By a suitable selection of pigment, Venetian red, when imitation red bricks are desired, or yellow or ochre, for imitation white bricks; any desired imitation bricks or tiles can be produced; or instead of pigments or other materials may be used for producing the desired effect.

COAL MINING IN AMERICA.—The coal mines of Pennsylvania to a great extent the property of railway companies, such as the Great Pennsylvania Company, Philadelphia and Reading Co., New Jersey, and other lines—of which both bonds and shares held in this country to from ten to twelve millions sterling. Nearly all the mines are unwrought at date of the late report, the States are not by any means promising localities for coal miners at present. One Welsh-miner named Bratton had taken to work one mine with non-union men. He was put down to leave the State within 24 hours, but he disregarded instructions. In consequence, a body of disguised men came from Wyoming to Bethlehem, where they concealed until an opportunity occurred of murdering Bratton, and succeeded in committing this murder, on August 17, they scattered, and none of the criminals were apprehended. The Governor of the State is very nearly that of civil war. The Governor has called out an army of 8000 men to suppress the insurrection, who will neither work themselves nor allow others to take their places. Meantime a number of the mines are closed, and money and time will be wasted in clearing them out. Lehigh and some other coal regions have been for a considerable time under military law, or guarded by soldiers, but the made of "Molly Maguires" has not yet been restored order, and these persons now rob the farmers under the pretence of help, which, if they do not receive, they contrive to take. The fruits of the great Protectionist system in one of the States. Winter approaches; the towns could be supplied with coal from Nova Scotia, and even New Brunswick, where a large anthracite coal has recently been met close to the shore; but duty placed on importation must add to the cost of the coal and the poor and unemployed.

AMERICAN MINING.—The present length of the Safford Tunnel, 17,825 ft. The face of the header is in soft ledge porphyry clay seams, requiring constant and careful timbering. The rate of advance is about 11 ft. per day. The air is of a high temperature, being 97°, but the ventilation is good. Borleigh Tunnel now penetrates into Sherman mountain a distance of 2200 ft. and is still being driven in as fast as the Borleigh compressors and high explosives, guided by skill and experience, can accomplish the work, which is at the rate of about 2 ft. per day. The holes are drilled with double fluted drills from 6 to 8 ft. The boring machinery is run back on the track about 200 ft. after each blast exploded. The gases resulting from the combustion of the powder are highly noxious, but the deleterious effects are more likely to be felt a distance of 200 ft. or more from the face of the tunnel than right up at the breast where air is supplied by the compressors. 20 lodes have already been intersected by the prospecting enterprise, two of which have been worked extensively, and immense quantities of ore have been taken. The deepest point yet attained in the practical workings of the mine on the Comstock, regardless of topographical inequalities at the surface, is in the Yellow Jacket Mine, level, where all the prospecting and development work of the mine at present is being done, is 775 ft. below the level of the Tunnel, or 170 ft. below the level of the lowest workings of any mine on the Comstock, which shows the deepest workings of any mine. It must be borne in mind, however, that the surface of the Imperial shaft is 200 ft. higher than the Yellow Jacket

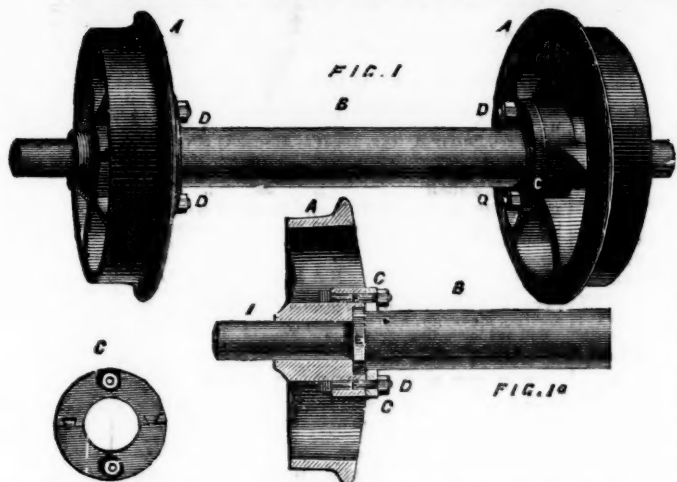
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The wheel is cast with a recessed boss in the inside, made to any shape, corresponding in shape and depth with a collar formed on the axle. Figs. 2 and 2a show a longitudinal view and plan of a pair of corf wheels fitted up for inside bearings. The washers are secured to the boss of the wheel in outside bearings by bolts and nuts, and in inside bearings by set screws.

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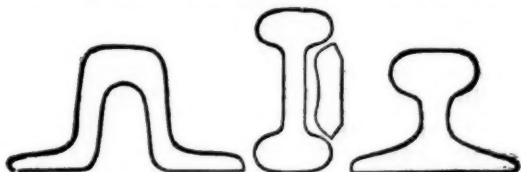
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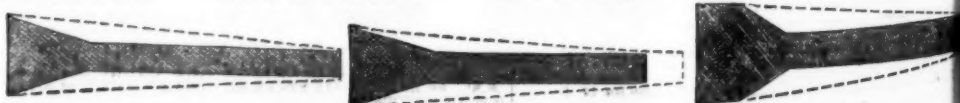
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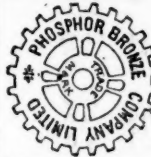
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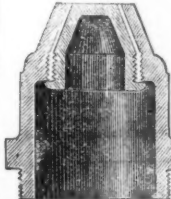
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IRON AND COAL

Shares.	Mines.	Paid.	Last wk.	Clos.	
40000	Aberdunann, <i>s</i> , Llanidloes*	1 0 0..	1½	1½	1½
10000	Aberystwith,* <i>s</i> , Llanidloes	5 0 0..	—	—	—
80	Ablon,* <i>s</i> , Cornwall	100 0 0..	—	—	—
7800	Algar & Burg,* <i>s</i> , St. Aust.	3 0 0..	3½	3½	3½
18000	Ambrase Lake, <i>t</i> , <i>s</i> , Liskeard	118 6..	—	—	—
12000	Assheton, <i>t</i> , Carnarvonshire*	5 0 0..	1½	1 1½	—
50000	Ballycumnick,* <i>c</i> , <i>s</i> , Sennell	2 0 0 0..	—	—	—
12000	Bedford United, <i>c</i> , Tavistock	2 0 6..	¾	¾	¾
78000	Belstone, Devon (27,000 <i>fy.</i> pd.)	1 0 0..	—	—	—
15000	Blaen United,* <i>s</i> , Cardigan	1 0 0..	—	—	—
3937	Nine Hills, <i>t</i> , <i>c</i> , St. Aust.	3 7 6..	—	—	—
30000	Bodidris,* <i>t</i> , <i>bl</i> , Denbighshire	1 0 0..	1½	—	1 1½
1000	Bollihofoe, <i>bl</i> , <i>s</i> , <i>bl</i> , Durham	0 0 0..	5½	—	5 5½
200	Botalack, <i>t</i> , <i>c</i> , St. Just†	121 5 0..	17½	—	15 17½
200	Bowden Hill,* <i>mn</i>	1 0 0..	—	—	—
6000	Bradwell Moss Rake	1 0 0..	1	—	¾ 1
40000	Caldbeck Fells, <i>l</i> , Cumberland*	2 0 0..	—	—	—
6000	Cambrian,* <i>s</i> , <i>c</i> , Cardiganshire	2 0 0..	2½	—	2 2½
5348	Cargoll, <i>s</i> , <i>l</i> , Newlyn†	6 9 0..	3½	—	3 8 ½
0000	Caron, <i>l</i> , Cardigan*	2 0 0..	2½	—	2 2½
0000	Central Foxide, <i>l</i> , <i>f</i> , of Man* (2 <i>l.</i> sh.)	1 5 0..	—	—	—
0000	Central Van,* <i>t</i> , <i>bl</i> , Llanidloes	5 0 0..	—	—	—
128	Clementine, <i>l</i> , Llanrwst	20 0 0..	—	—	—
7500	Combellack, <i>l</i> , Wenden	2 0 0..	2	—	1½ 2
0000	Combarntin,* <i>s</i> , <i>l</i> , North Devon	0 7 0..	¾	—	¾
400	Court Grange,* <i>s</i> , (6000 <i>sh.</i> pd.)	1 0 0..	1½	—	1½ 1½
0000	Cwm Dwyfor,* <i>c</i> , <i>s</i> , <i>l</i> , Carnarvonsh	0 14 3..	—	—	—
1500	Cwm Llanarsh, <i>l</i> , <i>c</i> , Carnarvon	2 0 0..	—	—	—
0000	Cwynystwith (New) [<i>bl.</i> shares]	4 0 0..	—	—	—
612	D'Esrey Mountain, <i>l</i> , <i>bl</i> , Llanrwst	20 0 0..	25	—	20 25
0000	Denbighshire Consolidated, <i>t</i> *	3 0 0..	2	—	1 2
0000	Derwent,* <i>l</i> , Durham	4 0 0..	3	—	2½ 3
0000	Dubby Syke, <i>l</i> , Durham*	0 12 6..	¾	—	¾
144	East Caradon, <i>c</i> , St. Cleer†	2 16 6..	¾	—	¾ ¾
0000	East Chiverton, <i>l</i> , Perranzabuloe	16 16 0..	2½	—	2 2½
0000	East Craven Moor, <i>l</i> , Pateley Bridge	10 0 0..	11	—	10 11
0000	East Goginan, <i>l</i> , Cardigan	2 0 0..	—	—	—
0000	East Van, <i>l</i> , Llanidloes	8 0 0..	5	—	4½ 5
222	East Wh. Lovell, <i>l</i> , Helston	8 11 0..	—	—	—
0000	Elgar,* <i>s</i> , <i>l</i> , Cardiganshire	1 0 0..	1½	—	1 1½
000	Fronvellan, <i>l</i> , Mont.* [4000 <i>sh.</i> <i>fy.</i> p. 1.]	1 0 0..	—	—	—
350	Gawton, <i>c</i> , Tavistock	4 3 6..	¾	—	¾ ¾
000	Glan Clwyd,* <i>l</i> , Gwyddelwern	1 0 0..	—	—	—
0000	Glenroy,* <i>s</i> , <i>l</i> , Isle of Man	4 0 0..	1½	—	¾ 1½
0000	Glyn,* <i>l</i> , Llanidloes	2 0 0..	¾	—	¾ ¾
0000	Goginan, & Llewellyn Newydd, Card., <i>l</i>	2 10 0..	—	—	—
0000	Gore, <i>c</i> , Merionethshire	1 0 0..	—	—	—
000	Great E. Foxdale, <i>c</i> , <i>f</i> , of Man	1 0 0..	1½	—	1½ 1½
000	Great Holway,* <i>l</i> , Flintshire	0 18 0..	—	—	—
000	Great Pant-y-Pydwel, <i>l</i> , Holywell	5 0 0..	5½	—	5 5½
000	Gt. Wheel Eleanor, <i>t</i> , North Bovey	2 0 0..	—	—	—
000	Grosvener, <i>l</i> , Holywell (£1 <i>sh.</i>)	0 15 0..	3	—	2 3
000	Harehope Gill,* <i>l</i> , Durham (£1 <i>sh.</i>)	0 5 0..	—	—	—
000	Harwood,* <i>l</i> , Durham	0 16 0..	1	—	1
000	Hush Elsteadford Minera,* <i>l</i>	2 0 0..	—	—	—
000	Islay,* <i>l</i> , Scotland	28 0 0..	—	—	—
000	Killalee, <i>st</i> , Tipperary†	1 0 0..	—	—	—
000	Killifreth, <i>l</i> , Chacewater	2 1 0..	¾	—	¾ ¾
000	Kingston Con., <i>s</i> , <i>l</i> , Stoke Climland.	1 0 0..	—	—	—
000	Ditto, preference	1 0 0..	¾	—	¾

WAGON COMPANIES

10	Birmingham Wagon Co. [L.]	4 0 0
10	Ditto, 2nd issue	4 0 0
20	Ditto, pref., 6 per cent.	10 0 0
20	British Wagon Co. [L.]	10 0 0
10	Gloucester [L.]	10 0 0
10	Ditto, 5th issue	10 0 0
10	Met. Rail. Car. and Wagon Co. [L.]	5 0 0
5	Ditto, pref., 6 per cent.	5 0 0
10	Midland	10 0 0
20	North Central Wagon Co.	20 0 0
5	Rail. Car. [L.] (Oldbury)	5 0 0
5	Ditto, pref., 6 per cent.	5 0 0
20	Shedfield Wagon Co. [L.]	10 0 0
10	Yorkshire Wagon Co. [L.]	10 0 0

TELEGRAPH COMPANIES

27	Anglo-American	100 00
10	Brazilian Submarine	10 00
20	Direct United States Cab's	30 00
10	Eastern	10 00
10	East, Ext'n., Australia and China	10 00
10	Great Northern	10 00
25	Indo-European	25 00
10	Mediterranean Extension	10 00
5	Reuters	5 00
80k.	Submarine	100 00
10	West India and Panama	10 00
30	Western and Brazilian	30 00
\$1000 Western Union, 7 per cent. Mort. Bonds \$1000 ..		

MISCELLANEOUS.

FOREIGN AND MISCELLANEOUS STOCKS, BONDS, LOANS, AND TRUSTS

178	Wheat Grenville, c, Cambora	1 1 0..	2 ...	1% 2
1,000	W. Mary Hutchings, * P, Plymton	2 18 0..	1% ..	1% 1
5000	Wheat Fever, c, Rodmuth	1 14 0..	4 ..	
12,000	Wheat Fellsell, c, Tavistock	6 7 0..	4 ..	8% 3
4000	Wheat Ury, t, c, Rodmuth	2 1 8..	3% ..	% %
480	White Cliff, * t, Laarwest	13 11 6	3% ..	% %
		4 0 0..		% %

b, blends; *c*, coal; *c*, copper; *g*, gold; *l*, lead; *s*, silver; *sl*, slate;
s-l, silver-lead; *t*, tin; *z*, zinc.

* Limited Liability Companies; † quoted on the Stock Exchange;
 ‡ have paid dividends.

3	k Atlantic and Great Western Leased Lines, Rental Trust	100	00.
25	Anstral. Mort. Land and Finance [L.]	8	00.
26	Australasian Agricultural	21	10 00.
10	Avoidale Engine [L.]	7	00.
81k.	Baltimore and Ohio, 4 per cent.	100	00 00.
10	Brighton Aquarium [L.]	10	00.
81k.	Cent. of N. York and N. Jersey, 1st Mort.	100	00 00.
81k.	Cent. Pacific of Calif., 1st Mort.	100	00 00.
25	City of London Real Property Co. [L.]	12	00.
25	Copper Miners of Eng. (7 p. c. p.f.)	30	00.
5	Diamond Rock Boring	4	10 00.
15	English and Foreign Credit	100	00.
10	Fine Street Warehous. [L.]	14	00.
15	Forster, Porter, and Co. [L.]	10	10 00.
5	Gen. Phos. & Chem. Works Co. [L.]	5	00.
1	Glaisdale Whinstone Quarry	1	00.
5	Kite Hill Tunnel [L.]	1	00.
17	Hudson's Bay Company	17	00.
10	Huntington Copper and Sul. Co.	5	00.
81k.	Illinois Central, \$100 shares	100	00.
81k.	Illinois & St. Louis Bridge, 1st Mort.	100	00.
81k.	Ditto, 2nd Mort., 7 per cent.	100	00.
81k.	Illinois Cent. Sinking Fund, 5 p. cent.	100	00.
81k.	Ditto, 6 per cent.	100	00.
75k	Imperial Credit [L.]	7	10 00.
	Ditto, Surplus Certificate	100	00.
81k.	Lehigh Cons. Mort., A, 6 p. cent.	100	00.
10	Milner's Safe [L.]	10	00.
25	National Discount [L.]	8	00.
81k.	N. Cent. Rail. Cons. Mort., 6 per cent.	10	00.
10	Pawson and Co. [L.]	8	00.
50	Pennsular and Oriental Steam	50	00.
10	Pennsylv. Gen. Mort. 1 per cent., 1910.	100	00.
81k.	Ditto, Cons. Sinking Fund, 5 p. cent.	100	00.
81k.	Scottish Aust. Investment Company.	100	00.
81k.	Ditto, 6 per cent. Preference	100	00.
10	Silber Light (ord. sh.)	10	00.
20	Suez Canal shares	20	00.
12	Telegraph Construc. & Mainte. [L.]	12	00.
10	Ditto, Second Bonus Three per Cent.	100	00.
10	Tharston Shipbuilding and Copper Works	100	00.
81k.	Union Pacific Land Grant, 1st Mort.	100	00.
81k.	Union Pacific Railway, 1st Mort.	100	00.

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